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THE UNITED STATES NAVY RESERVE COMPONENT'S ACCOUNT MANAGEMENT CHALLENGE IN A NAVY MARINE CORPS INTRANET ENVIRONMENT

by

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September 2005

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13. ABSTRACT (maximum 200 words)

Declining budgets and the reduction of workforce has caused many organizations to perform additional job assignments with fewer personnel. These organizations realized that in order to survive in a competitive market, scarce resources would provide the most value if used to work on mission-essential tasks, while allowing the performance of support functions by an outside source (called outsourcing). The Department of the Navy (DoN) is one organization that has chosen to outsource many business areas, but none bigger than the outsourcing of information technology (IT) to form the Navy Marine Corps Intranet (NMCI)—the largest IT outsourcing contract to date.

While the DoN has faced many challenges since the onset of the NMCI contracting agreement, this thesis focuses on the challenges faced by the Navy Reserve with managing the Intranet's user accounts. The research uses the principles of Business Process Redesign (BPR) and Knowledge Management (KM) to determine the current state (As-Is) and to recommend changes in the account management process. Specifically, the Knowledge-Value Added (KVA) methodology was used to determine the amount of knowledge quantitatively embedded in each sub-process for a relative comparison of the value that the sub-processes provide to the overall process.

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THE UNITED STATES NAVY RESERVE COMPONENT'S ACCOUNT MANAGEMENT CHALLENGE IN A NAVY AND MARINE CORPS INTRANET ENVIRONMENT

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GLOSSARY OF TERMS AND DEFINITIONS

Account – Capability to provide a person or function access to the NMCI Network and services and is chargeable against the ledger.

Account ledger – Accounting system that provides the capability to track every individual account status and corresponding digital identity.

Active Account – an account that has registered signs of activity and is also chargeable.

Active Directory[1] – A central component of the Windows platform, Active Directory directory service provides the means to manage the identities and relationships that make up network environments. It is a centralized and standardized system that automates network management of user data, security, and distributed resources, and enables interoperation with other directories.

Chargeable Account – NMCI account that is actively used by individual or in a functional role including e-mail and access to NMCI resources.

Claimant – a claimant denotes the next level of management below the Chief of Naval Operations headquarters staff within the budget arena. In the Navy's tradition of relatively decentralized management, the major claimants are the focal point for executing the Strategic Sourcing Program.

Contract Line Item 0024 (CLIN 0024) – an additional non-classified account that provides a user account in addition to those provided with ordered data seat(s).

Contract Line Item 0026AL (CLIN 0026AL)[2] – an NMCI contract item referred to as a Move Add Change (MAC). A MAC is an administrative logical change to a user account not associated with provisioning of an ordered Contract Line Item (CLIN). They are separated into three categories with some chargeable and some non-chargeable.

Deactivated – An account where access to NMCI is no longer permitted but the digital identity and flat name space is retained for future use on NMCI.

Deleted – Account completely deleted from NMCI.

Disabled – An account that is not accessible and all e-mail is rejected.

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[1] Information obtained from the following websites (Accessed April 2005):
http://www.google.com/search?hl=en&lr=&oi=defmore&q=define:Active+Directory ;
http://www.microsoft.com/windowsserver2003/technologies/directory/activedirectory/default.mspx

[2] Information from the NMCI website (Accessed April 2005):
http://www.nmci.navy.mil/Primary_Areas/Contract/Content/Files/Contract_Artifacts/Conformed_Contract/N00024-00-D-6000_Attach1-P00129.pdf

Echelon – An Echelon is a Civil War term used to describe the arrangement of military troops during battle. In this document, it is defined as the hierarchy or separation of military command or of a headquarters. The lower the echelon number, the higher the command in the reporting chain. For instance, an Echelon II command is one level above an Echelon III in the reporting chain of command

Identity - Identities are pieces of information that identify a users association of existence.

Identity and Access Management - a set of processes and technologies to more effectively and consistently manage user objects over relatively large numbers of systems and directories.

Locked – Account not able to be accessed by individual but e-mail will continue to be routed to the mailbox.

New Account – Account that has never been established on the NMCI Network. Usually the result of: Accession or New Employee (Civilian).

Non-Chargeable Account – NMCI Account that has been deactivated and the member does not have access to NMCI.

Pending – Account Established but has not been accessed by user.

Provisioning - The automation of business-oriented work flow of systems, resources, services and devices to employees, partners, contractors, suppliers and temporary workers.

Reactivated Accounts – A Deactivated Account that has been reestablished with stored digital identity.

Seat Identification – a unique eight (8) digit number assigned to each seat entered into the NMCI Enterprise Tool (NET) database. Every asset that is considered a seat in NET is assigned a SeatID. Any peripherals that are attached to a seat do not have its own SeatID. If a peripheral is ordered as a seat (stand alone) then it would have its own SeatID.

Stale – System indicates a locked account that has remained inactive for over 30 days with no attempts to utilize the account.

LIST OF ACRONYMS

AC	Active Component
ACTR	Assistant Customer Technical Representative
BPR	Business Process Redesign
CAC	Common Access Card
CIO	Command Information Officer
CLIN	Contract Line Item
COI	Community of Interest
COTS	Commercial-off-the-Shelf
CNRF	Commander, Navy Reserve Force
CNRFC	Commander, Navy Reserve Forces Command
CTR	Customer Technical Representative
DCTR	Deputy, Customer Technical Representative
DEERS	Defense Enrollment Eligibility Reporting System
DoD	Department of Defense
DoN	Department of the Navy
DRILLRES	Drilling Reservist
EAMWG	Enterprise Account Management Working Group
EDS	Electronic Data Systems
eMarketplace	Electronic Marketplace
ESP	External Service Provider
FOC	Full Operational Capability
FTS	Full Time Support
GAL	Global Address List
GAO	General Accounting Office
IAM	Identity and Access Management
IDIQ	Indefinite Delivery Indefinite Quantity
IT	Information Technology
KM	Knowledge Management
KVA	Knowledge Value Added
MAC	Move, Add, Change
NET	NMCI Enterprise Tool
NMCI	Navy Marine Corps Intranet

NRA	Navy Reserve Activity
NSIPS	Navy Standard Integrated Personnel System
PC	Personal Computer
RC	Reserve Component
R&D	Research and Development
RESFOR	Reserve Forces
RFP	Request for Proposal
ROI	Return on Investment
ROK	Return on Knowledge
SeatID	Seat Identification
SP	Service Provider
SR	Service Recipient
SR eForm	Service Request Electronic Form
SRM	Service Request Management
SYSCOM	System Commands
USN	United States Navy
ViViD	Voice, Video, and Data

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I.   INTRODUCTION

A.   PURPOSE

This thesis analyzes how the U.S. Navy Reserve is currently managing Navy Marine Corps Intranet (NMCI) accounts. The research defines seat management, provides a brief history of NMCI, identifies the As-Is process for account management and the associated significant challenges, provides an analysis of "best-of-breed" commercial-off-the-shelf (COTS) products used by industry for account management, and outlines best practices of commercial companies that have adopted the seat management concept. It also explores and proposes a non-technical enterprise solution that could feasibly be implemented by Commander, Navy Reserve Force (CNRF) to minimize the current account management challenges.

B.   BACKGROUND

Government agencies have been implementing seat management concepts with information technology (IT) contracting since 1997. Also known as desktop outsourcing, seat management is the process where organizations outsource the maintenance and ownership of their desktop personal computers (PCs), including all required hardware, software, network support, and help desk services to commercial companies that specialize in those services. Simply stated, seat management involves buying desktop computing power as a unified service with pricing computed on a "per user" or a "per seat" basis, hence, the term seat management. One method of a seat management environment allows the contractor to maintain ownership of all the resources such as network and desktop hardware and software, and delivers the resultant computing capability as a service, often compared to a utility.

The NMCI contract, arguably the largest and most complex seat management effort attempted to date, was awarded in October 2000 as a multi-year performance-based contract. Awarded as an indefinite deliver/indefinite quantity (IDIQ) contract with Electronic Data Systems (EDS) Corporation as the prime contractor, NMCI is expected eventually to provide service for roughly 400,000 Navy and Marine Corps personnel. The contract is valued between $9-$13 billion and was awarded as a five-year base

contract covering fiscal years 2001 through 2005, with a three-year option period continuing into fiscal years 2006-2008.

There can be many benefits derived from seat management contracting and the development of the NMCI naturally inherited many of these benefits. With proper structuring of the requirements and the contract, commercial expertise and best practices can be leveraged to result in improvements such as quality improvement, better response time, higher reliability and availability, and/or reduced system downtime. While organizations that embark on a seat management approach hope to save money, most realize benefits are in the area of quality improvement.

Management of these benefits present many challenges for the organizations that have chosen to embrace seat management. The structure of the Department of the Navy (DoN) and the diversity in its business processes caused the management of NMCI to be unique and more complex than the management of such contracts in the commercial sector. The large number of transient military personnel that relocate every two to three years for new military assignments and the numerous geographically dispersed shore-based commands that reside on the Intranet adds to the complexity of information technology (IT) management in the NMCI environment. One of the many challenges involves the management of all associated accounts that reside on NMCI in addition to the unused accounts affiliated with each seat. This challenge continues to haunt the U.S. Navy Active Component (USN AC) and the U.S. Navy Reserve Component (USN RC) resulting in an estimated additional cost of $35 million per year.

The objective of this thesis is to analyze the current processes associated with account management. Recommendations are provided on improvements to simplify the management of accounts and decrease the $35 million additional annual cost.

C. RESEARCH QUESTIONS
1. Primary Research Question

How might the U.S. Navy Reserve Component (USN RC) effectively manage accounts in the NMCI environment?

2. Secondary Research Questions

- How were the accounts allocated during NMCI deployment?

- How are the USN RC Customer Technical Representatives (CTRs) currently tracking NMCI accounts per region?

- How is the Navy Reserve Forces Command currently managing NMCI accounts for the USN RC?

- How is the U.S. Navy Active Component (USN AC) currently managing NMCI accounts?

- How are some of the large commercial companies, which have adopted the seat management concept, successfully managing accounts across an enterprise solution?

- What are the 'best-of-breed' COTS products used by industry for account management?

- What would be a feasible non-technical solution that the USN RC, and perhaps the USN AC, could implement?

D. SCOPE AND LIMITATIONS

The scope of this thesis includes an in-depth analysis of the USN RC's current process and the sub-processes involved in managing NMCI accounts. This analysis defines and outlines the As-Is process for account management. The scope analyzes how commercial companies that have implemented the seat management concept are managing their remote locations and the feasibility of the USN RC implementing a similar solution. "Best-of-breed" COTS tools used by industry for account management were reviewed for feasibility of use as a management tool by the USN RC. The recommendations include a non-technical solution for minimizing the current challenges affiliated with account management. The analysis is from a business process perspective. Therefore, a software solution is not provided as a deliverable and is beyond the scope of this thesis.

E. METHODOLOGY

The methodology used to fulfill the requirements for this thesis consisted of the following steps. First, a comprehensive literature review of journal articles, General Accounting Office (GAO) reports, and other library information resources was conducted to understand the history of NMCI and its progression. Second, an in-depth content analysis was conducted of official websites, presentations, and journals to understand the pertinent NMCI contract terms and current business process. Third, phone interviews, a

review of presentation material, and a review of official documents were utilized to grasp the USN RC implementation, cutover plan, and key challenges with NMCI. Fourth, a web-based survey, followed by phone interviews, was primarily used to gather data on the manner in which accounts are currently managed within various commands across a myriad of echelons.[3] The results of the survey were used to determine the relationship between each of the sub-processes and their correlation. Fifth, web research and phone interviews were conducted to gather data from commercial companies that have implemented the seat management concept successfully. Sixth, coordination with vendors and web research was the method used to analyze "best-of-breed" COTS packages used in industry for account management. As a result of these steps, the researcher was able to evaluate the effectiveness of the current account management process, perform a feasibility analysis, and make recommendations for an enterprise solution to account management.

F. BENEFITS OF THE RESEARCH

This thesis analyzes how the USN RC is coping with the current account management challenges and defines the current state (i.e., As-Is model) of managing accounts. Additionally, it provides an analysis of COTS packages that could consolidate several applications that are currently used for account management, analyzes commercial companies that have implemented the seat management concept and identifies best practices used to make seat management successful in their environment. Recommendations are provided on how the USN RC can better manage accounts by making modifications to the current information technology systems, establishing an enterprise solution, and by making changes in the business processes. Implementation of these recommendations is expected to yield a cost savings of approximately $35 million and to create an efficient and standardize management process. This study could not only benefit the USN RC, but also the USN AC as they are also faced with similar NMCI challenges.

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[3] An Echelon is a Civil War term used to describe the arrangement of military troops during battle. In this document, it is defined as the hierarchy or separation of military commands or of a headquarters. The lower the echelon number, the higher the command in the reporting chain. For instance, an Echelon II command is one level above an Echelon III in the reporting chain of command

G. ORGANIZATION OF THE THESIS

Chapter II provides a comprehensive history of NMCI and the road to transition completion for the USN RC. Chapter III gives a detailed analysis of the challenges associated with managing accounts. Chapter IV defines the methods used to determine the current state, identifies how the data was obtained to determine the current state, and provides a detailed outline of the current sub-processes associated with account management. Chapter V provides an in-depth analysis of "best-of-breed" COTS products as well as an analysis of industry best practices for outsourced seat management contracts. Chapter VI provides recommendations for an enterprise solution for managing accounts. It also contains research conclusions and answers to the research questions.

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II.   NMCI HISTORY AND THE ASSOCIATED BENEFITS

A.   INTRODUCTION

This chapter discusses the history of the NMCI program to establish the background and reference point for the analysis of the associated account management challenges presented later in the thesis. It also provides a description of the NMCI program and the inherent benefits of seat management contracting.

B.   DRIVING FACTORS FOR THE NEED TO CHANGE

Prior to the inception of NMCI, Department of the Navy (DoN) was faced with many challenges and shortfalls in IT management, acquisition, and operations. The declining manning levels and budget led to reductions in military and civilian personnel. The competition created by industry made it increasingly difficult to retain a highly-skilled IT workforce. The rapid growth and evolution of technology outpaced DoN's ability to remain current, and thus resulting in obsolete business processes, antiquated infrastructure, and legacy computers riding on low speed network circuits. Declining budgets did not match IT requirements for hardware and software refreshment, which led to IT assets being retained longer than recommended by industry standards without maintenance contracts to support them. Funding was given to the larger System Commands (SYSCOMs) and the Research and Development (R&D) labs to build and design technologically advanced networks to support their mission. These commands are called the "haves" while the smaller commands were given minimal IT funding and yet were required to work with antiquated systems that caused them to expend a good portion of their resources to managing and maintaining the systems. These commands are frequently considered the "have-nots". [Ref. 7]

Joint Vision 2010 mandated that future operating environments strongly emphasize the decisive advantage conferred by superior information management and knowledge dominance in order to achieve operational success and information superiority. Knowledge dominance is defined as the ability to establish a force that can leverage technology to access knowledge and quickly share information in the form of education, learning, training, and human expertise using a networked joint architecture. Information superiority can be defined as providing military forces with the capability to

collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same. In a non-combat situation this means that U.S. forces would have the necessary information to achieve their operational objectives. In order to provide the operational environment necessary to promote information superiority, connectivity is necessary between all parts of shore establishments, and with all deployed forces at sea and ashore. This connectivity would enable an environment in which all members can collaborate freely, share information, and organizational learning can be fostered. [Ref. 6].

The DoN reshaped its vision to support the speed, volume, and diversity of knowledge required to operate effectively within the framework of joint military forces. DoN is building the infrastructure necessary to achieve information superiority and support knowledge dominance. Ashore, the infrastructure takes the form of the Navy Marine Corps Intranet (NMCI) that will ultimately connect all DoN ashore facilities and permit rapid, secure, information transfer, and universal Internet access.

C.   NAVY MARINE CORPS INTRANET (NMCI)

NMCI is a corporate-style Intranet that links Navy and Marine Corps shore-based installations. The NMCI contract was awarded in October 2000 as one of the DoN's responses to the requirement of Joint Vision 2010 to obtain information superiority [Ref. 1]. The contract was designed using the principles of seat management in order to reap the benefits inherent in seat management concepts. It is a multi-year performance-based, indefinite deliver/indefinite quantity (IDIQ) contract with a dollar value ranging $9-$13 billion with Electronic Data Systems (EDS) Corporation as the prime contractor and includes a five-year base period covering fiscal years 2001 through 2005 with a three-year option period. Once Full Operational Capability (FOC) is reached, the Intranet is expected to provide network services for roughly 400,000 U.S. Navy and Marine Corps shore-based computer workstations, also called "seats."

The concept behind the NMCI transformation effort is to apply the speed and opportunities of Internet technology not only to warfighting tasks, but also to the daily activities of personnel, and especially those dealing with administrative and support tasks. The purpose of NMCI is to provide the Navy and Marine Corps with secure universal access to integrated voice, video and data communications (ViViD) as well as

to eliminate interoperability problems across stove-piped networks and to remove anomalies in the network thereby improving productivity and speed of command. It also includes classified and unclassified connectivity in its architecture to make it arguably one of the most robust, comprehensive, enterprise-wide outsourced seat management contracts to date. One of the primary goals identified in the NMCI contract is to bring the Navy and Marine Corps' disparate information technology ashore systems together under a single vendor to increase security and interoperability. The ultimate goal is to allow DoN operators to focus on their mission rather than be concerned with IT services and all the technical problems related with infrastructures and administration activities.

D.   EXPECTED BENEFITS OF NMCI

With the implementation of NMCI, DoN was able to take advantage quickly of the several benefits that are potentially inherent in a seat management contract. Once fully implemented, the NMCI contract will consolidate Navy and Marine Corps networks that are scattered over 300 military bases into a single enterprise-wide managed service. The benefits received from this enterprise approach include improved interoperability and access as the consolidation of networks and locations will eliminate locally built stove-piped systems. Consolidating the IT budget at the U.S. Navy Active Component (USN AC) and the U.S. Navy Reserve Component (USN RC) Echelon II levels enabled increased visibility of IT costs. Enterprise-wide quality improvements have also been realized in the form of better response time, more reliable system availability, and reduced downtime.

Another benefit of NMCI is improved security. Consolidating the stove-piped networks to form an enterprise-wide solution has exponentially increased security throughout DoN. When consolidating networks, multiple access points are eliminated reducing points of vulnerability in the system. [Ref. 5]. NMCI provides stringent information assurance support and increases the level of security management to unprecedented heights across DoN.

"Technology refreshment" is another advantage of seat management contracting. Technology refreshment has been defined as the periodic replacement of commercial-off-the-shelf (COTS) components such as processors, displays, operating systems, and software, to support the continued operation of the system through an indefinite service

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life. Technology refreshment is a way to extend the useful life of IT resources while keeping abreast of technological advances. Such planned upgrades not only ensure that systems stay current with the latest commercial technology, they also allow the organization to stay ahead of the "obsolescence curve." [Ref. 8]

Information technological advances have been coming so quickly and thus resulting in a huge burden for an organization to plan and budget for upgrades in the traditional fashion. By incorporating a technology refreshment requirement into the NMCI seat management contract, EDS becomes responsible for planning and implementing the upgrades at no additional costs beyond the already known seat pricing. The NMCI contract, for example, contains technology refreshment requirements that software be updated annually or to maintain one revision from the current state, while hardware is updated every three years. [Ref. 9]. Military organizations like the Navy Reserve would have not been able to maintain such technology refreshment requirements without the implementation of NMCI.

Another benefit of NMCI is that it allows DoN to divert personnel resources previously performing routine tasks associated with desktop IT resources (e.g., helpdesk personnel). By transferring the ownership and responsibility for the resources to commercial vendors who specialize in IT support, DoN personnel can focus on the command's core mission rather than running desktop systems. This benefit of NMCI is even more important today since the Government is finding it more difficult to compete with the private sector for IT personnel. By freeing agency personnel from the day-to-day routine support tasks, they can perform other, potentially more interesting work and more business sensitive tasks. Meaningful work may help to retain critical IT professionals.

With NMCI, DoN obtains secure seamless end-to-end, integrated service delivery of desktop systems, including hardware and software upgrades, technical support and training. They will simply pay a fixed monthly fee for those services based on a per-seat calculation. Outsourcing seat management effectively shifts responsibility for keeping pace with technological changes to the contractor, "who must be knowledgeable, adaptable and capable of constantly assessing how to deliver better, more cost-effective desktop services to the end user." [Ref. 4]

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E. CHAPTER SUMMARY

This chapter provided an overview of the inception of NMCI and its connection to Joint Vision 2010. In addition, the chapter also provided a historical view of the multitude of services provided by NMCI. Many are inherent in seat management contracting and some are unique to the NMCI contract. The chapter concluded with an examination of the benefits of NMCI and the harvesting opportunities realized by DoN. The next chapter provides a detailed examination of the account management challenges and concerns of the USN RC.

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III. THE ACCOUNT MANAGEMENT CHALLENGE

A. INTRODUCTION

The development of the Navy Marine Corps Intranet (NMCI) provides an enterprise-wide solution to seat management that connects all Navy and Marine Corps commands on one network platform. The Navy Reserve senior leadership realized the benefits of such a network and fully embraced the concept as they encouraged a rapid implementation of NMCI by their subordinate commands.

The U.S. Navy Reserve Component (USN RC) was considered to be one of the "have-nots" as they were operating old hardware (in some cases with Pentium II and Pentium III computers), outdated software applications (some were running Microsoft Windows 98 operating system), and antiquated peripherals to support the Full Time Support (FTS) and the Drilling Reservists (DRILLRES) personnel assigned to their Navy Reserve Activity (NRA). They were required to operate with a reduced IT budget and were not able to keep abreast of the pace of technology. The USN RC leadership realized that the establishment of the NMCI would provide them with modern technology across all NRAs and would standardize equipment and services across DoN.

While learning from some of the early lessons of their U.S. Navy Active Component (USN AC) counterparts during their NMCI cutover and planning, the information technology leadership of the USN RC began to develop plans, common profiles, and demand models that would assist in their NMCI transition. Reserve commands were cutting over to NMCI and ordering accounts at a rapid pace. They soon realized that account management would become a problem as DRILLRES and FTS began to transfer to other NRAs, be recalled to active duty, and retire or resign while their accounts remained active at the losing command. The transient personnel began to relocate faster than the Navy Reserve senior leadership could determine the process and set policy for handling the accounts. As the race to the NMCI cutover began, so did the challenge of account management. The Navy Reserve senior leadership realized that they were in need of an enterprise solution to account management as an estimated cost savings of approximately $35 million could be achieved.

Although NMCI is very beneficial, many challenges remain in managing such a large-scale contract. The focus of this chapter addresses the problems incurred by the USN RC with managing over 80,000 accounts for DRILLRES, Reserve FTS, and civilian personnel in the NMCI environment. Although the focus is on the USN RC, this problem is not unique to them but is also experienced by the USN AC as well.

B.   THE CHALLENGE IN ORGANIZATIONAL STRUCTURE

When the NMCI contract was awarded, DoN still had many areas that required clearly defined processes and management standards. Account Management is one of the areas that lacked a standard enterprise-level process, which led to the problems that are experienced today. The initial intent was to manage the accounts at the Echelon II level and it was at this level that "the enterprise" would be defined. Management, to include acquisition and budget, at the Echelon II level meant that DoN would be responsible for the overall management of accounts and would have access to the NMCI operating and funding requirements of both the USN AC and the USN RC. All accounts were to be aggregated and distributed at the enterprise level. [Ref. 10]

The definition of "the enterprise" did not evolve as initially intended with the final award of the contract. The decision was that overall management would occur at the Echelon II claimant[4] levels of the USN AC and the USN RC instead of combining them under the USN AC as an effort to simplify the management. These Echelon II commands would then be responsible for all NMCI management under their claimancy, which further required that all budgeting and fiscal responsibility for NMCI also be given to each based on their individual requirements. Thus began the account management challenges of today.

When the NMCI contract was awarded, the DoN and the contractor agreed to couple the "seats" with user accounts. The anticipated seat purchase was expected to be roughly 400,000 and it was believed that adding user accounts to the seat for one cost would not only provide the computers, also called the "seat", but would also allow additional user accounts to be assigned to the hardware at no additional charge. It was

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[4] A claimant denotes the next level of management below the Chief of Naval Operations headquarters staff within the budget arena. In the Navy's tradition of relatively decentralized management, the major claimants are the focal point for executing the Strategic Sourcing Program.

decided to arrange the contract so that each unclassified "seat" would be accompanied with two "free user accounts" and that each classified "seat" would lend five accounts "per seat". This approach was to eliminate the need for DoN to purchase a large quantity of additional user account services from the contract as the two "free user accounts" that would accompany the 400,000 unclassified seats would be sufficient to cover the DoN for a total of 800,000 accessible accounts.

The initial goal was to have an aggregated "pool" of all the unused user accounts remaining from the 800,000 that would be accessible by all of DoN. When needed, accounts would be allocated from the pool and deposited back to the pool when an account is no longer in use. The 800,000 free user accounts were expected to cover the majority of the users requiring access to NMCI and DoN would pay a minimal service cost for any additional accounts that exceeded this amount.

Separating the two Echelon II claimants when defining "the enterprise" (USN and USN RC) dampened this plan as each of the claimants could now only have access to the seats that were included in their NMCI service order, and subsequently, the accounts that accompanied each of those seats. No business rules were developed to allow accounts to be shared between the claimants to achieve the intended costs savings for DoN. This structure created problems for the Navy Reserve because they would require a plethora of additional user accounts above the total derived from their seats.

The USN RC structure and requirements are unique when compared to its USN counterpart. With most of its 80,000 plus force in DRILLRES status, there was not a requirement to have a large number of seats but a need existed to have a large number of accounts. The aforementioned definition of the enterprise caused them to order a large number of additional user accounts from the NMCI service contract as the total free accounts that were derived from the seat order were not sufficient. In fiscal year 2004, it was estimated that USN had approximately a surplus of 70,000 unused accounts while the USN RC was required to purchase support services for approximately 30,000 accounts at a cost of approximately $700 for each account per annum. The lack of visibility and accessibility across claimants led the USN RC to spend approximately $30 million dollars for additional user accounts.

C. COMMAND MANAGEMENT

The NMCI contract is a service contract that allows its customers to decide what services they want and order those services from the contractor. The services are identified as Contract Line Items (CLINs) and are ordered by the government's representative called a Customer Technical Representative (CTR). Appendix A includes a list of the CLINs. The CTRs are located at the Echelon II level and possess overall contract management responsibility on behalf of the government. The CTR also has lower level representatives, called the Deputy Customer Technical Representative (DCTR) and Assistance Customer Technical Representative (ACTR), who are responsible for daily NMCI management at their local NRA. The business rules have established a distinct difference in responsibility between them as the ACTR (also called an authorized initiator), who is responsible for sending any request that requires contractor action and funding approval to the DCTR (also called an authorized submitter). In addition to managing the local accounts, the DCTR is responsible for reviewing and submitting any requests generated by the ACTR and has been granted authority by the CTR to authorize any funding requirement to support submitted requests. For the purpose of this thesis, the terms technical representative and account manager is used synonymously.

Although the CLINs and their description appear in Appendix A, one of the problems with account management involves the management of CLIN 0024 (Additional Non-Classified Account) and CLIN 0026AL (Administrative Move Add Change). Per the contract, CLIN 0024 is defined as "an additional Non-Classified Account that provides a user account in addition to those provided with ordered data seat(s)." The price for a CLIN 0024 is $58.26 per month or approximately $700 per annum [Ref. 11]. It is important to note that the problems identified in the previous section of a high account-to-seat ratio have resulted in the USN RC paying for over 30,000 CLIN 0024's. A CLIN 0026AL is defined as an administrative Move, Add, Change (called a MAC). Most CLIN 0026AL's are a one-time chargeable transaction for a service provided by the contractor for modifications to current hardware/software configurations and accounts. The area of concern for this thesis is charges accrued because of account-generated MAC's. The price for each CLIN 0026AL request is $36.60.

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Management of accounts by the technical representatives has also been a challenge. The lack of policy and standards and a single integrated IT solution has caused the technical representatives to spend an enormous amount of time reconciling what seats and user accounts the IT management systems say they have and what is actually on-site.

Business processes are not in place to direct the proper management of a user account from its inception to the termination of service (cradle to grave). The following sections provide more detail on the types of issues that the USN RC is currently experiencing with account management.

1. Duplicate Accounts

Problems exist with technical representatives establishing new accounts for users that already have an NMCI account in Active Directory whereby creating what is called a duplicate (or excess) account, which increases the user account total and the requirement for CLIN 0024's. For those managers that are investigating whether an account already exists before submitting a request for a new account, they are not properly trained on which databases or systems should be used to verify a user's status. Many check the Global Address Lists (GAL) for verification, but should also verify account status in the Active Directory. The GAL and Active Directory differ in that the GAL provides a list of email addresses while the user account is actually generated in Active Directory. A user may not necessarily have an email address listed in the GAL, but may have a chargeable account listed in Active Directory. Conversely, the GAL may contain multiple email accounts for users that are not listed in Active Directory. In order for a manager to accurately determine all the duplicate accounts, communication would be required with an NMCI system administrator to gain access to both the hidden and visible accounts in Active Directory. Many scenarios exist in which a duplicate account can be created. In order for the reader to understand the challenge, the next two paragraphs provide two examples of the types of scenarios that could result in the creation of a duplicate account.

A duplicate account can be difficult to determine when a user has a common name (i.e., John Smith). An example is a current NMCI user with a common name who reports to a gaining command. The technical representative asks if a NMCI user account

already exists and John Smith, having never used his NMCI account before, says that one does not exist. The technical representative checks the GAL or Active Directory, notices a large number of John Smith's in the system, and therefore, elects to create a new account for the user. The user now has an account created from a previous command and a newly-created user account from his new command. For the Navy Reserve, this would equate to payment of two CLIN 0024s if the two "free" accounts that accompanied the seats are completely occupied.
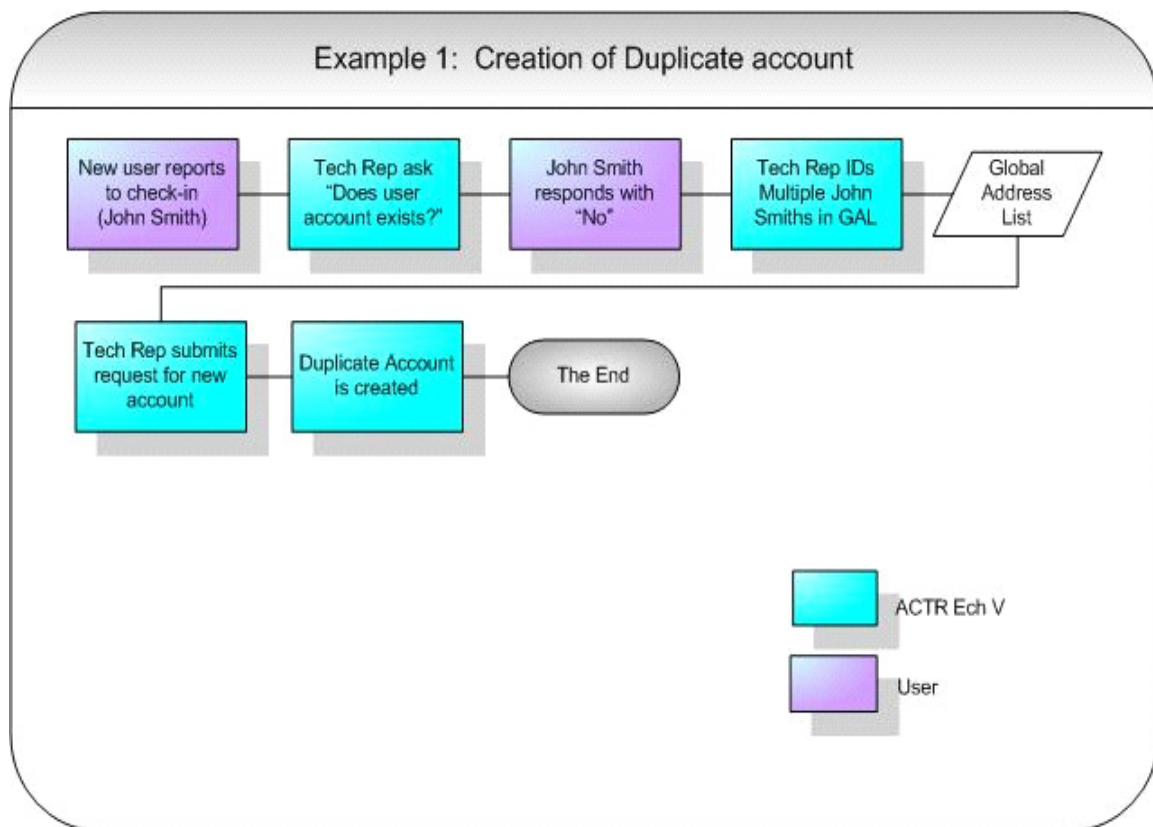

Figure 1.   Duplicate Account Creation Example 1.

Duplicate accounts are also difficult to determine when an inadvertent creation is made when a user is transferring to a new location while his losing command is preparing for NMCI transition. For example, a user (i.e., John Doe) was previously located at a command (for instance, San Diego) that was in the beginning phases of transition (called cutover) to NMCI. The local ACTR submitted an account creation request for John Doe when the command's initial NMCI order was submitted. In the middle of the San Diego

transition, John Doe relocates to another command (for instance, Washington D.C.) and he was unaware that the San Diego NRA initiated a pending service request to create a new account. The Washington D.C. command, having already cutover to NMCI, submits a request to have a new account created for John Doe and the newly created account name is John Doe 2. The submission of the request for a new service results in the claimant paying for a duplicate account for John Doe.
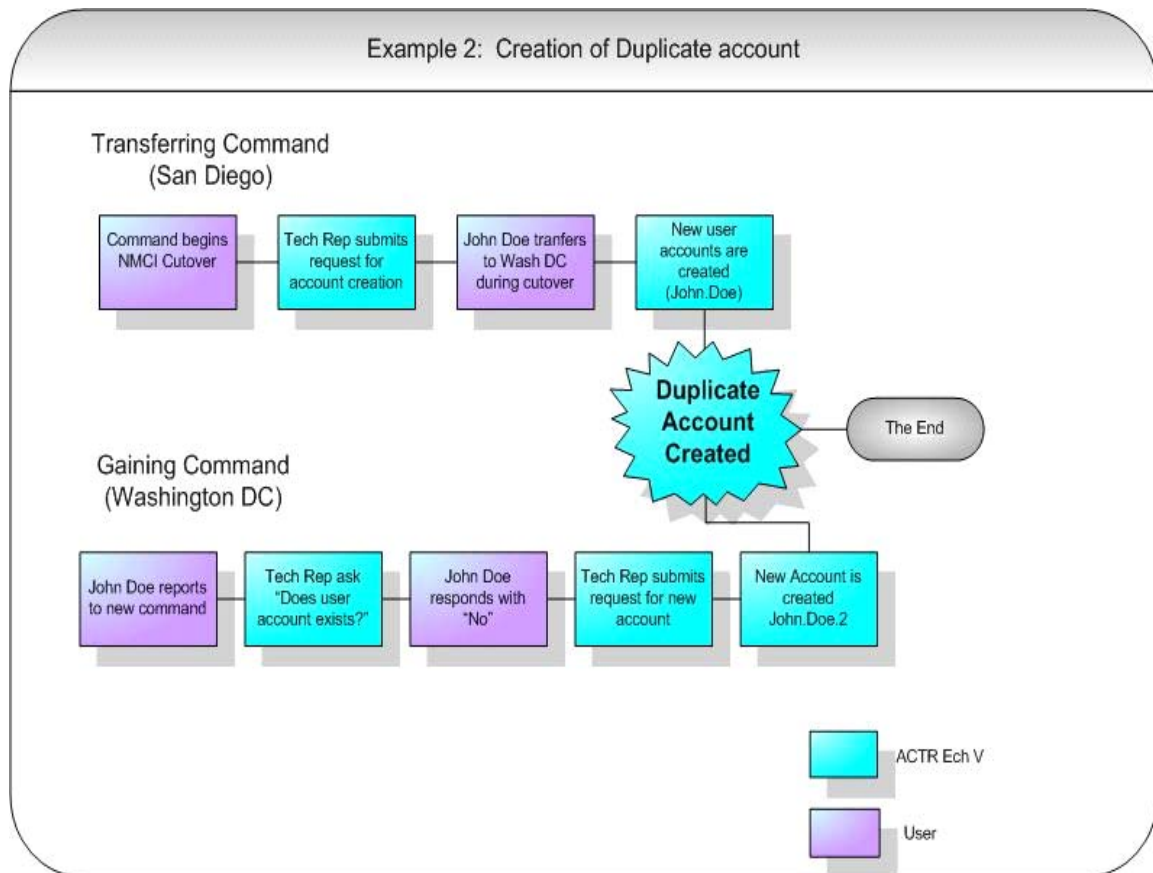

Figure 2.   Duplicate Account Creation Example 2.

Possibly the worse case scenario for creating a duplicate account is when a local account manager intentionally does not verify if an account exists in any of the available database resources when a user reports to the command. In some cases, negligent management oversight has been the cause of duplicate account creation.

Although not all-inclusive, the aforementioned examples provide insight into the possibility of an account manager creating duplicate accounts in a highly complex management process.

2. Multiple Accounts

The unique nature of the Navy Reserve requires some personnel maintain a duplicate account with valid reason. A duplicate account that has been justified by the claimant is called a multiple account. Multiple accounts are valid accounts that are given based on a job or "role" that the account holder may perform in an organization. A DRILLRES may have a Reserve account funded by the USN RC claimant, and another separate NMCI account for a civilian occupation funded by the claimant over that organization. The "role", or job function, of an NMCI user determines the need for multiple accounts.

For example, a DRILLRES will have a Reserve account. Depending on the job functions and the level of access required, it is possible that a civilian occupation requires NMCI access, and thus, a separate unclassified account may be required. As a DRILLRES, special access might be required to a classified network, which will require a third NMCI account. The separate account would be required for the classified network because the unclassified and classified NMCI networks are physically separated for security reasons. Since they are physically separated, there is a different Active Directory and different servers that support the network, and therefore, require a different account. An NMCI user could have many accounts depending on the "roles" that must be performed. The "role" is what drives the account creation, and thus, increases the cost for managing each of those additional accounts when purchasing a CLIN 0024.

3. Inactive or Unused Accounts

Currently, the USN RC is paying for personnel accounts that have transferred to active duty, separated or retired from the Navy Reserve, transferred to a non-NMCI command, and even deceased personnel. Accounts for users that fall in one of these categories have shown no activity and are categorized as an inactive or an unused account. However, funding is still allocated to cover the cost of these accounts.

Figure 3 outlines the six categories of accounts. [Ref. 12] Of these categories, chargeable unused accounts are categorized as active, locked, stale, or disabled. An "active" account is a chargeable account actively used by an NMCI account holder. An account that is "locked" is a chargeable account that is not accessible by a NMCI account holder. A "stale" account is a NMCI system term used to identify an account that has remained inactive for over 30 days with no attempts to utilize the account. A "disabled" account is a chargeable account status not accessible and all email is rejected. An account is placed in this status when a user has not attempted to access NMCI. All of these cases produce unnecessary additional costs for the USN RC and the DoN.

	Digital ID in Active Directory (Flat Name Space for e-mail)	Access to NMCI	Internet Access	E-mail address	E-mail storage/ GAL Visibility	Can receive e-mail	Send e-mail (if under limit)	Access to personal shares	Personal storage exists (H: Drive)	Access to public shares (if granted permission)	Chargeable
Active	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Locked	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	Yes
Stale	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	Yes
Disabled	Yes	No	No	Yes	Yes	No	No	No	Yes	No	Yes
Deactivated	Yes	No	No	Yes	No	No	No	No	No	No	No
Deleted	No	No	No	No	No	No	No	No	No	No	No

Figure 3.   Draft NMCI Instruction.

A report produced by EDS in December 2004 revealed that there were approximately 18,600 accounts that fell into one of these categories. [Ref. 10] Action should be taken to move these accounts to one of the non-chargeable categories of deactivation or deletion, but there is resistance in arbitrarily doing so without approval from the Echelon II claimant. The Navy Reserve continues to pay for these accounts even with substantial evidence of no activity.

4.   Excessive Move, Add, Change Request

Transferring user accounts to other NMCI commands requires the technical representative to submit a chargeable MAC request, or CLIN 0026, to the DCTR. Close coordination is required by both the transferring command and the gaining command to alleviate multiple MAC submissions for the same account. For example, the technical representative is notified that an NMCI user will be transferring from the local command. The transferring technical representative submits a MAC to have an account deactivated

while a member is in travel status. This is one chargeable transaction. When the member reports, the gaining command submits a MAC to have the member's account transferred to their activity and could possibly generate a third MAC to have the account reactivated. This creates another chargeable transaction. Proper coordination between the losing and gaining command could have eliminated the need for multiple MACs and required the payment for one CLIN 0026.

### 5.	Multiple Stove-Piped IT Systems

Since a single-integrated NMCI IT management tool does not exist, technical representatives are required to use multiple IT systems to perform overall account and seat management. Data residing in a myriad of systems generates problems with data synchronization and accuracy. The NMCI Enterprise Tool (called NET) is a web-based portal used as a data repository for recording information about all seats and peripherals at each site. Simply stated, it is DoN's inventory management system and also is the gateway used to order services to be delivered on NMCI. Initially, it was built to maintain a record of hardware and software. A later version enabled some account information, in the form of profiles, to be added by the users, but the database is not an accurate reflection of the accounts existing in each command and is not robust enough to include all the information required to manage accounts properly. In its current configuration, NET does not effectively perform the account management function. Additionally, technical representatives must use the Global Address List (GAL) or Active Directory to verify the status of a new or existing account of gaining or transferring personnel since the account data is currently inaccurate in NET.
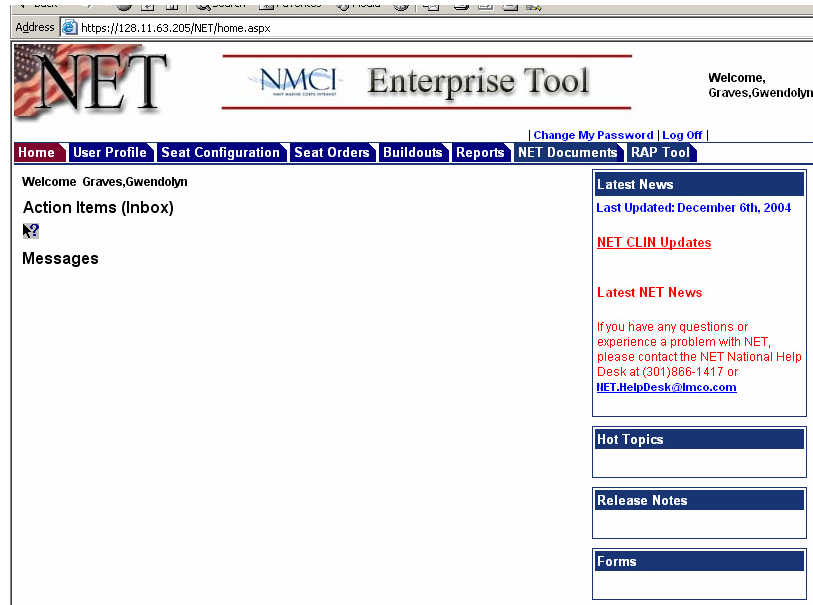
Figure 4.   NMCI Enterprise Took Web Portal.

Technical representatives are required to use a separate tool to validate NMCI seat and account orders. Electronic Marketplace (called eMarketplace) is the web-based tool used to perform monthly validations on billing invoices. The validation is a method of verifying that the contractor is billing for existent services at their location.   Some interface between NET and eMarketplace exists but the two systems are not properly synchronized, and therefore, the data does not match.
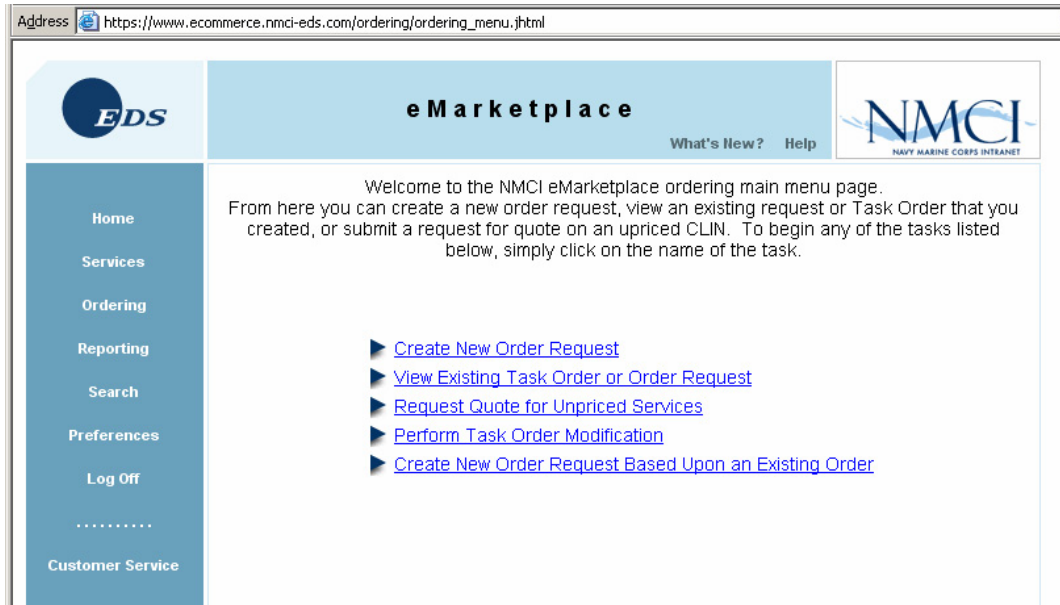
Figure 5.   eMarketplace Website.

MACs are submitted and managed using a separate web-portal called the Service Request Electronic Form (SR eForm).   The SR eForm is the contactor's tool for managing MAC requests. The technical representative must enter any request for a MAC into the SR eForm and the request is eventually routed to the contractor electronically.
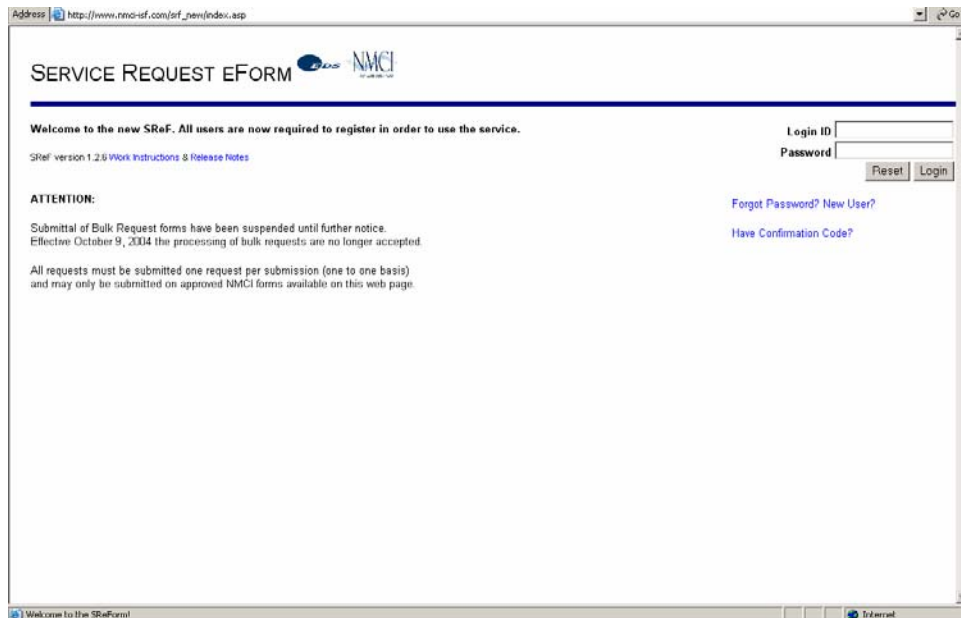
Figure 6.   Service Request Electronic Form Web Portal.

Since most of these management systems do not interface with each other and are not fully integrated, the data contained in them are not synchronized across the enterprise and a true corporate data repository does not exist. The lack of a fully integrated system requires the technical representatives to pull data, in some cases redundant data, from each to perform daily routine tasks. Currently, the array of systems has created an intense manual process, and in their current configuration, these systems do not effectively support account management. The various IT stove-piped systems have caused inefficiencies in the overall account management process for the contractor and the Navy Reserve.

D.   CHAPTER SUMMARY

This chapter provided a detailed examination of the significant challenges and concerns associated with account management. These challenges involve the current organizational structure which disallows account aggregation or sharing between the claimants; the lack of policy and procedural guidance for account managers causing them to create local procedures that may not include all areas of account management; the different types of account creation (i.e., duplicate, multiple, and Inactive accounts) that causes excess chargeable account to the USN RC, and the multitude of stove-piped IT account management systems. They have hindered the current account management process and have made it ineffective. Addressing these challenges and integrating the systems would achieve an increase in the benefits of the NMCI contract while creating a more effective and efficient account management process.

The next chapter provides a detailed analysis of the current state, called the As-Is, of the NMCI account management process across the Navy Reserve. User surveys and a process to measure the knowledge in each task were used to determine the current state and the amount of value each task provides to the overall organization.

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IV. THE CURRENT PROCESS OF ACCOUNT MANAGEMENT

A. INTRODUCTION

This chapter describes and analyzes the U.S. Navy Reserve Component's (USN RC) current approach to managing accounts. The necessity of capturing the current process was crucial before making recommendations on modifications to the process. While several methods were used to identify the current process, the theory of determining the amount of knowledge required to generate the outputs of the overall process, and each of the sub-processes, proved beneficial in determining the value that each sub-process provides to account management. This methodology, called Knowledge Valuation Analysis or Knowledge Value Added (KVA), measures the amount of knowledge required to generate the outputs of a process or sub-process in common units of measurement.

This chapter provides a general overview to Knowledge Management (KM), the principles of KVA, the use of KVA to perform Business Process Redesign, and how each was used to complete the research in this thesis. Additionally, the chapter describes the methodology used to capture the detailed analysis of each sub-process currently involved in managing accounts. Lastly, the chapter identifies the knowledge levels currently embedded in each sub-process and their relative comparison in the overall account management process.

B. KNOWLEDGE MANAGEMENT

The fundamental building material and engine of wealth of the modern corporation is the creation and utilization of knowledge. The real challenge in the Information Age is to understand how to accelerate the conversion of knowledge into money through understanding how to measure knowledge assets. [Ref. 13] Knowledge has value that must be managed and invested just as organizations manage their human resources, equipment, and financial resources. In many ways, it is considered the most valuable asset within an organization because the knowledge increases the more it is used within a process. Oftentimes, organizations refer to their organizational knowledge as "Intellectual Capital." This term is appropriate because although it may be difficult to

assign organizational knowledge a monetary value, it is still an important commodity nonetheless.

Many knowledge enthusiasts profess that the idea of managing the knowledge in an organization has begun to surpass common business strategies of managing investment capital. The onset of the knowledge era and the evolution from the Industrial Age to the Information Age has caused a progression in management that shifts the focus from managing people to managing intellectual capital. This transformation has caused many companies to realize that their success is contingent upon how successful they are at managing the knowledge within their organization. Organizations are constantly finding ways to capture and share knowledge effectively and efficiently as a means of creating value and reducing costs within the business processes.

The field of Knowledge Management has sparked interest in many organizations worldwide. In simplest terms, knowledge management can be defined as the practice of promoting the generation of new knowledge, the codification of knowledge, and providing availability or transfer of that knowledge all to reap the greatest benefit (profit) from the asset. Knowledge management also entails the measurement of knowledge. Skandia Corporation, an international insurance company, has begun to publish an Annual Report supplement to its financial statement that outlines their Intellectual Capital. In their book *Measuring and Managing Knowledge*, Housel and Bell describe knowledge management as a "way to determine what knowledge should be privately held and how it can be protected from competitors and clients." [Ref. 14:p. 8] This is important as a company's competitive advantage, in fact, often lies in its privately held knowledge.

With a company's success dependent upon its ability to manage and leverage knowledge assets effectively, competitive focus has shifted from trying to "out-do" one another to trying to "out-know" one another [Ref. 14]. Enterprises are realizing how important it is to "know what they know" and to be able to make maximum use of the knowledge. This knowledge resides in many different places such as databases, knowledge bases, filing cabinets, and in the heads of employees and are distributed across the enterprise. All too often one part of an enterprise repeats work already done by

another part simply because there has not been careful tracking of organizational expertise or experiences. Most traditional company policies and controls focus on the tangible assets of the company and leave unmanaged their important intangible knowledge assets. Knowledge management is forcing enterprises to determine what their knowledge assets and core competencies are and how to manage and make use of these assets to obtain maximum return.

Success in an increasingly competitive marketplace depends critically on the quality of knowledge organizations apply to their key business processes. For example, the supply chain depends on knowledge of diverse areas including planning, raw materials, manufacturing, and distribution. Likewise, product development requires knowledge of consumer requirements, new science, new technology, marketing etc. [Ref. 15] Achieving success is accompanied by many challenges that can dictate whether an organization maintains or gains the competitive advantage.

The challenge of deploying the knowledge assets of an organization to create a competitive advantage becomes more crucial as [Ref. 15]:

- The marketplace, at the local and global levels, is increasingly competitive and the rate of innovation is rising, so that knowledge must evolve and be assimilated at an ever-increasing rate.

- Corporations are organizing their businesses to be focused on creating customer value. Staff functions and management structures are being reduced. There is a need to replace the informal knowledge management of the staff function with formal methods in customer aligned business processes.

- Competitive pressures are reducing the size of the workforce which holds this knowledge.

- Knowledge takes time to experience and acquire while employees have less time to gain the experience and acquire the knowledge.

- There is a need to manage increasing complexity as changes in strategic direction may result in the loss of knowledge in a specific area. Subsequent reversal in policy may then lead to renewed requirements for this knowledge but the employees possessing that knowledge may no longer exist within the organization.

1. Knowledge in the Context of Knowledge Management

While many definitions exist for knowledge, there is still a level of complexity in understanding the manner in which it can be employed in the various fields of study. To

implement knowledge management successfully within an organization, the managers must be able to define knowledge before they can begin to manage it.

At issue is the definition of knowledge management and the component concepts. Thomas Davenport, in discussing knowledge management and related concepts, has presented the following ideas [Ref. 16].

Data are a set of objective facts about events or structured records of transactions. These records may give quantity, cost, color, size, but usually fail to record why the purchase was made, how likely it is a repeat purchase, request for a service, or the occurrence of an event.

Information on the other hand is "usually in the form of a document or an audible or visible communication. Information has a sender and receiver and is intended to change the way the receiver perceives something. ***It's data that makes a difference."*** Information moves around organizations through hard networks with visible and definite infrastructure, wires, delivery vans, satellite dishes, post offices, addresses, electronic mailboxes and soft networks or informal networks often invisible and less formal.

Knowledge is usually recognized as broader, deeper and richer than data or information. Davenport and Prusak define knowledge as:

> a fluid mix of framed experience, values contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers.

In organizations, knowledge often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.

Knowledge assets are the tacit and explicit knowledge-creating objects such as markets, products, technologies, and organizations that a business owns or needs to own and which enable its business processes to generate profits, add value, etc. Explicit knowledge is that which has been easily articulated and is simple to transfer from one person to another. Nonaka and Takeuchi state that it can be expressed in words and numbers, and easily communicated and shared in the form of hard data, scientific formulae, or codified procedures [Ref. 18]. It is easy to codify and can normally be found

shared in documents, databases, and other tangible media. Examples of explicit knowledge include chemical formula, market forecasts, software code, and technical standards. Conversely, tacit knowledge has an increased level of difficulty when trying to capture and share it because it is subconsciously understood and developed from direct experience and action [Ref. 19]. Tacit knowledge is "deeply rooted in an individual's action and experience, as well as in ideals, values or emotions: that have developed within an individual." [Ref. 18] Knowledge management is not only about managing these knowledge assets but also about managing the processes that act upon the assets. These processes include developing knowledge; preserving knowledge; using knowledge, and sharing knowledge.

Therefore, **Knowledge Management** involves the identification and analysis of available and required knowledge assets, knowledge asset-related processes, and the subsequent planning and control of actions to develop both the assets and the processes so as to fulfill organizational objectives. Knowledge management is not only about managing these knowledge assets but managing the processes that act upon the assets. These processes include developing knowledge; preserving knowledge; using, and sharing knowledge.

Although some writers like Karl-Erik Sveiby define knowledge management as "the art of creating value from intangible assets" [Ref. 20], implementation of knowledge management in fact involves activities in information management, information technology, and human resources development. Component activities of knowledge management have been undertaken by librarians and other information professionals, educators, database administrators and other information technology personnel.

What then makes the difference between the normal activities of these professionals and ventures into knowledge management? An important factor is the emphasis on achieving organizational strategies, and the consequent need for cultural change, increased teamwork, integration of content and information technologies and continuing development of related organizational policies.

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2. The Role of Information Technology in Knowledge Management

The concept of treating organizational knowledge as a valuable strategic asset has been popularized by leading management and organization theorists. Organizations are being advised that to remain competitive, they must efficiently and effectively create, locate, capture, and share their organization's knowledge and expertise. They must also demonstrate the ability to bring that knowledge to bear on problems and opportunities.

Although knowledge management is becoming widely accepted, few organizations are fully capable of developing and leveraging critical organizational knowledge to improve their performance [Ref. 19]. Many organizations have become so complex that their knowledge is fragmented, difficult to locate and share, and therefore, redundant, inconsistent or not used at all. In today's environment of rapid change and technological discontinuity, even knowledge and expertise that can be shared is often quickly made obsolete. The reach of know-how and experience possessed by individuals can be greatly extended once it is captured and explicated so that others can easily find, understand and use it.

The information technology infrastructure should provide a seamless "pipeline" for the flow of explicit knowledge to enable [Ref. 19]:

- Capturing knowledge
- Defining, storing, categorizing, indexing and linking digital objects corresponding to knowledge units;
- Searching for ("pulling") and subscribing to ("pushing") relevant content,
- Presenting content with sufficient flexibility to render it meaningful and applicable across multiple contexts of use.

The focus is on the technologies that capture, store, and distribute structured knowledge for use by people. The goal of these technologies is to take knowledge that exists in human heads and paper documents, and various disparate systems and media, and make it widely available throughout an organization [Ref. 17]. Information technologies such as the World Wide Web offer a potentially useful environment within which to build a multimedia repository for rich, explicit knowledge. Input is captured by forms for assigning various labels, categories, and indices to each unit of knowledge. The structure is flexible enough to create knowledge units, indexed and linked using

categories that reflect the structure of the contextual knowledge and the content of factual knowledge of the organization, displayed as flexible subsets via dynamically customizable views.

Effective use of information technology to communicate knowledge requires an organization to share an interpretive context. The more that communicators share similar knowledge, background and experience, the more effectively knowledge can be communicated via electronically mediated channels [Ref. 23]. Michael Zack stated in his research in *Managing Codified Knowledge* that at one extreme, the dissemination of explicit, factual knowledge within a stable community having a high degree of shared contextual knowledge can be accomplished through access to a central electronic repository [Ref. 19]. However, when interpretive context is moderately shared, or the knowledge exchanged is less explicit, or the community is loosely affiliated, then more interactive modes such as electronic mail or discussion databases are appropriate. When context is not well shared and knowledge is primarily tacit, communication and narrated experience is best supported with the richest and most interactive modes such as video conferencing or face-to-face conversation [Ref. 19].

In understanding the role of IT in knowledge management, it is important to emphasize that IT is an enabler of knowledge management rather than a driver. Subsequently, IT is only the pipeline and storage system for knowledge exchange. It does not create knowledge and cannot guarantee or even promote knowledge generation or knowledge sharing in an organizational culture that does not favor those activities [Ref. 17]. Technology alone will not force a person with expertise to share it with others. While technology is common in the domain of knowledge distribution, it rarely enhances the process of knowledge use. Extensive behavioral, cultural, and organizational change could cause a positive environment that would encourage knowledge use.

IT is also relatively less helpful when it comes to knowledge creation, which remains largely an act of individuals or groups and their brains [Ref. 17]. Housel and Bell further highlight this by offering two principals that could make moving knowledge assets advantageous. First, simple and procedural knowledge that is employed frequently should be moved to IT.   Relocating procedural knowledge like assembly line

manufacturing to IT drastically decreases the cost per usage of each unit of knowledge utilized. Second, organizations should seek to capture in IT the knowledge that typically dies when an employee leaves the company. The complex or tacit knowledge that an employee accumulates with years of experience is often indispensable and should be captured in IT to ensure continued operations. Capturing the knowledge in IT ensures the knowledge remains embedded throughout the processes and is accessible to any new process owners. While many organizations desire to capture this tacit knowledge embedded in the heads of its employees to gain or maintain the competitive advantage, providing such knowledge is left to the discretion of the employee and should be voluntarily provided without a violation of rights.

C.   KNOWLEDGE-VALUE ADDED

The fundamental building material of a modern corporation is knowledge. Housel and Kanevsky [Ref. 13] state that the engine of wealth in today's business economy is the creation and utilization of knowledge. Understanding how to accelerate the conversion of knowledge into money is one of the many challenges in the Information Age. This 'knowledge payoff' occurs when an organization's most valuable intangible asset – knowledge- is converted into bottom line value in the form of concrete, saleable products.

The knowledge embedded in an organization's structure (processes, technology, and people) is the genome that represents the code required for reproducing organizational products. This 'code' is virtually equivalent to the value added by the organization because it is what is necessary and sufficient to reproduce the organization's products and services [Ref. 13].

It has been often stated that you cannot manage what you cannot measure. This notion has its roots in the understanding that a system requires feedback to keep it on track. What managers monitor and measure determines what feedback they obtain and how well their systems are geared to achieving their goals. The basic goal for monitoring and measuring knowledge is to determine how well it is producing value in organizational processes. This requires following the use of knowledge throughout an organization's core processes and its interactions with the marketplace.

Drs. Housel and Kanevsky recognized the need for an objective means for measuring organizational knowledge in common units and developed a methodology called knowledge-value added (KVA) to do this. KVA helps managers understand how to best leverage the knowledge resident in employees, information technology, and core processes. The essence of KVA is that the knowledge utilized in core processes to generate organizational outputs can be translated into numerical form as a common unit of measure. This translation provides an indication of the value added by process knowledge and allows allocation of a benefit stream to that knowledge. Tracking the conversion of knowledge into value, while measuring its bottom-line impact, enables managers to increase the productivity of critical assets.

Simply stated, KVA can be defined as a new method of gathering historical data about the outputs of an organization's processes. These new data are described in a common unit of measure that reflects the amount of organizational knowledge required to produce the outputs. Once organizational knowledge has been quantified using KVA, it can be monetized and used in common performance ratios such as ROI and in new ratios such as knowledge in use compared to knowledge in inventory or knowledge in people compared to knowledge in IT. KVA can also be used to develop estimates of price per unit of knowledge as well as cost per unit of knowledge, using either monetized or non-monetized common units.

1.   KVA Theory

In order to understand the concepts of KVA, it is important to understand the KVA value-adding cycle and the fundamental assumptions where it derives its validity as a knowledge measurement method. See Figure 7.

$$P(x) = y$$

Process **P** is a business process.

If input **x** is equal to output **y**, no value has been added by process **P**.

If input **x** is changed by process **P** into output **y**, value has been added and is ≈ change.

Change can be measured by the amount of knowledge required to make the change.

This knowledge ≈ the amount of time it takes for an average learner to acquire the knowledge.

So, value added by process ≈ change ≈ knowledge required to produce the outputs

Housel, T. & Kanevsky, V. (1995) "Reengineering Business Processes: A Complexity Theory Approach to Value Added," INFOR **33**(4): 251.

Figure 7.   Fundamental Assumption of KVA (From: Ref. 13).

Figure 7 illustrates these assumptions.

- In any process, there is an input, a process that changes the input, and an output.

- If the input is equal to the output, then the process adds no value.

- If a process produces an output that is different from the input, then the amount of change is proportional to the amount of value added by the process. The "change" that takes place during the process is what creates value.

- Change can be discussed in terms of the amount of knowledge that it takes to produce that change.

- Therefore, there exists a proportional relation between value and the knowledge required to make change.

By accepting the assumption that knowledge and change are proportional, it is then possible to use knowledge as a surrogate for value when assessing process units of outputs. Once the units of outputs are standardized into a common unit of measure, the knowledge, then is it feasible to make beneficial comparisons across multiple processes.

2.   How KVA Works

What makes KVA a powerful tool is that it can be relatively simply defined in three different approaches, yet it is robust enough to produce a desired level of detail should managers desire a more comprehensive view of the organizational processes.

Housel and Bell have defined three different ways to establish the value of knowledge embedded in the IT systems and the people within an organization. See Figure 8.

Steps	Learning time	Process description	Binary query method
1.	Identify core process and its subprocesses.		
2.	Establish common units to measure learning time.	Describe the products in terms of the instructions required to reproduce them and select unit of process description.	Create a set of binary yes/no questions such that all possible outputs are represented as a sequence of yes/no answers.
3.	Calculate learning time to execute each subprocess.	Calculate number of process instructions pertaining to each subprocess.	Calculate length of sequence of yes/no answers for each subprocess.
4.	Designate sampling time period long enough to capture a representative sample of the core process's final product/service output.		
5.	Multiply the learning time for each subprocess by the number of times the subprocess executes during sample period.	Multiply the number of process instructions used to describe each subprocess by the number of times the subprocess executes during sample period.	Multiply the length of the yes/no string for each subprocess by the number of times this subprocess executes during sample period.
6.	Allocate revenue to subprocesses in proportion to the quantities generated by step 5 and calculate costs for each subprocess.		
7.	Calculate ROK, and interpret the results.		

Figure 8.   Three Approaches to KVA (From: Ref. 14).

Figure 8 summarizes each approach.

- Learning Time: Learning time measures how long it takes an "average learner" to learn a function or process. Once the learning time has been determined, it is then multiplied by the number of times that function is performed over a predetermined period of time.

- Process description: Describes products relative to the number of instructions required to reproduce them. Once the number of instructions has been determined, it is then multiplied by the number of times the process executes.

- Binary Query Method: Creates a set of binary yes/no questions such that all possible outputs are represented as a sequence of yes/no answers. Once the answers have been collected, multiply the length of the yes/no string for each of the sub-processes by the number of times the sub-process was executed.

While Housel and Bell states that the Binary Query Method is the most accurate approach to doing KVA, it is also the most tedious and is most suitable for processes that require the highest degree of accuracy and granularity. This thesis utilizes the Learning

Time method to calculate the Return on Knowledge (ROK) for the Navy Reserve Account Management process.

3. Return on Knowledge

Industry has traditionally used ratio analysis to assist with determining and measuring a company's profitability and performance. One such ratio, commonly used by industry, is Return on Investment (ROI). ROI indicates how many dollars of profit are generated by each dollar of cost. It is used to help organizations make capital investment decisions, initiate future business solutions, and select the best course of action. While many benefits can be achieved by using ROI analysis, it falls short in the ability to reflect indirect costs and fluctuating returns accurately over time. The ROI is calculated by considering the annual benefit stream (or profit) divided by the cost associated with the benefit stream. The equation is simply:

$$ROI = \frac{\text{Revenue - Cost of Investment}}{\text{Cost of Investment}} = \frac{\text{Net Benefit}}{\text{Total Cost}}.$$

While commercial industry has reaped benefits in using ROI, such an analysis is difficult for not-for-profits such as the Department of Defense (DoD), in which a traditional "revenue stream" is not generated. Rather than using some extrapolation of cost in place of a revenue stream (for example, cost savings), KVA can assist DoD to measure and allocate a proxy for revenue that will enable it to determine the value of its knowledge-base assets (people, processes, and technology) that cannot be reflected in traditional ROI methodologies. KVA data populates a new ratio, Return on Knowledge (or ROK), which describes "returns" in terms of the number of units of knowledge that are generated by each unit of knowledge cost. Using Learning Time as a surrogate for the return in ROI, the ROK ratios can now be defined as:

$$ROK = \frac{K}{C}$$

where:

K = Knowledge generated by a single core process

C = Cost assigned to Time to Complete a single core process, or surrogate for cost assigned

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D. BUSINESS PROCESS REDESIGN

Business Process Redesign (BPR) has had a major impact on organizations that have desired to make changes in their organizational processes to achieve higher levels of effectiveness and efficiency. The concept of BPR as a strategy to make modifications within organizational business processes began its history in the 1980's. At that time, investments in IT did not result in corresponding improvements or increases in productivity and performance. Many explanations were given as to why IT did not produce the results that were expected. Some blamed the IT and such things as the way it was being implemented, the user-unfriendly nature of software, the lack of managerial understanding of IT (called technophobic), the lack of information systems professionals understanding of business (called technocentric), and faulty implementation of IT [Ref. 22].

Years of continued failure of IT investments caused business to shift its focus. They began to realize that perhaps the IT systems were not to blame, but rather that organizational processes, structures and designs were not work-friendly. They realized that applying IT to traditional hierarchical structures, complex procedures, and antiquated organizational designs exacerbated the problems, and that automating them with IT cemented complex archaic structures through automation rather than improved them (El Sawy, 2001). This approach of applying IT to existing problems is simply an exercise in paving the cowpath[5].

As the competition begin to ramp up, many scholars began to research ways in which organizations could achieve faster cycle times, cost cutting, and improvements in customer responsiveness. The overwhelming desire was to find ways of performing business that would yield exponential increases in performance. These scholars concluded that the demands could only be met by rethinking how business is performed and by taking advantage of the capabilities of IT. Hence, the BPR concept began to take industry by storm.

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[5] Paving the cowpath refers back to the early part of this century, when people simply paved the traditional serpentine roads needed for animal-based transportation, rather than re-routing roads directly over the hill to take advantage of powerful automobile technology. In Information Technology, it refers to automating inefficient processes thus creating more inefficiency.

1. BPR Defined

In order to understand BPR fully, first it is necessary to determine the definition of a business process. Davenport and Short (1990) define a business process as "a set of logically related tasks performed to achieve a defined business outcome." It implies a strong emphasis on how work is performed within an organization. In their view, processes have two important characteristics: 1) They have customers (internal or external) and 2) They cross organizational boundaries (i.e., they occur across or between organizational subunits). Processes are generally identified in terms of beginning and end point, interfaces, and organization units involved, particularly the customer unit. Conversely, El Sawy (2001) defines a business process by breaking down the letters in the BPR acronym. He states that the focus is on end-to-end business processes that extend to the customer the value of the process. He further indicates that the 'B' "defines the boundaries of a process in a way that makes sense in terms of business value: the coordination of ensembles of tasks performed by many people rather than narrow tasks performed by one person." The 'P' in BPR has a "primary focus on essential processes that deliver outcomes is the signature of all variants of BPR rather than a focus on static organizational structures." It looks primarily at dynamic process flows that move rather than static organizations structures. It is cross-functional in scope within an enterprise. He states that it is a coordinated and logically sequenced set of work activities and associated resources that produce something of value to a customer (El Sawy, 2001). While the definitions of a business process given by Davenport and El Sawy differ, both indicate that a process must have boundaries, relationships, and create an output. By examining the definition of a business process, a clearer understanding of BPR can now be gained.

Much has been written about the concept in both the practitioner trade press and in academic research, yet finding a common definition of BPR has become an impossible task. Davenport and Short has defined BPR as "the analysis and design of workflows and processes within and between organizations" [Ref. 21]. El Sawy provides a more comprehensive definition as he states that BPR is a performance improvement philosophy that aims to achieve quantum improvements by primarily rethinking and redesigning the way business processes are executed [Ref. 22].

2.   The Use of IT and BPR

While both of these definitions slightly vary in meaning and in interpretation, both authors agree that the use of IT is the key enabler of BPR. Davenport and Short argued that BPR requires taking a broader view of both IT and business activity, and of the relationships between them. IT should be viewed as more than an automating or mechanizing force to fundamentally reshape the way business is done. They believe that business activities should be viewed as more than a collection of individual or even functional tasks in a process view for maximizing effectiveness. IT and BPR have a recursive relationship. IT capabilities should support business processes, and business processes should be in terms of the capabilities IT can provide. Davenport and Short (1990) refer to this broadened, recursive view of IT and BPR as the new industrial engineering.

El Sawy indicates that the success of BPR is not solely reliant on the redesign of business processes. He states that the work environment around the business process may require some adjustments. He uses the *Leavitt Diamond* structure shown below to demonstrate this theory and to illustrate how BPR fits into an organization. Harold J. Leavitt developed the Leavitt Diamond (Figure 9) to demonstrate the relationships between four key functions of the BPR initiative. Managing the organizational variables of IT use, organizational form, requisite people skills, and business processes is imperative to ensure that the organization maintains the balance required for BPR success. For example, if a new IT is introduced into the organization, business processes may need to be changed to take advantage of the technology. The use of the new IT and the newly designed process may require new people skills to match, and perhaps a new organizational form (more centralized, or team-based, for example) [Ref. 22].
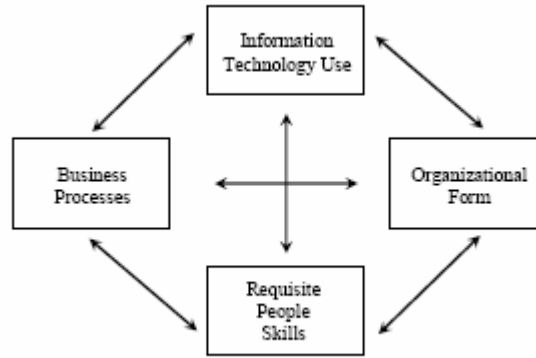
Figure 9.   The Leavitt Diamond.

Understanding such a framework is critically important when redesigning processes that are knowledge intensive. As processes change and the remaining variables in the Leavitt Diamond are affected, changes in the knowledge that surrounds the process will likely change dynamically. It either departs with outgoing personnel or becomes useless because it resides in the heads of personnel who have been disassociated with the process. Thus, when redesigning processes, it is imperative to ensure that the knowledge about the process is considered and captured in the IT where feasible.

3.   Phases of BPR

Table 1 and Figure 10 depict the phases of BPR, as defined by El Sawy, and what actions are completed in each phase. [Ref. 22] While this thesis focuses only on the first two phases, it is important to note that proper execution of Phase 3 is imperative in order to make the BPR IT solution successful. Figure 10 illustrates that the foundation for the success of the process redesign model is the requirement to share process knowledge. The sharing of this knowledge is required within each phase of the BPR cycle. Table 1 provides each of the phases and the activities that accompany them. The information contained within the table provides enough high-level detail and little explanation of each is required.

Phase 1 Scoping the process	Phase 2 Modeling, analysis, and redesign of process	Phase 3 Planning process integration
Activities		
• Operationalize process performance targets • Define process boundaries • Identify key process issues • Understand best practices and define initial visions • Outline data collection plan and collect baseline data • Plan for modeling phase	• Continue data collection • Model "As-Is" baseline process • Analyze and diagnose "As-Is" process • Design and model "To-Be" process alternatives • Analyze "To-Be" process alternatives and select best alternative • Plan process integration phase	• Provide workflow model or requirements for IS design • Adjust process design • Plan for process implementation
Deliverables		
• Process Scoping Report	• Software-Based Process Model • Partner Impact Report • Process Reengineering Report	• Process Integration Plan
Key Participants		
• Process Owners and Partners • Customers of Process • BPR Team	• Process Participants • BPR Team	• IS Design Team • BPR Team

Table 1.   Key Phases and Activities in BPR (From: Ref. 22).

The phases are:

- Phase 1: Scoping phase

    - This phase is used to define the inputs to the process undergoing change and the desired output to achieve. This phase keeps the BPR team focused and on course throughout the BPR process.

- Phase 2: Modeling, Analysis, and Redesign phase

    - In this phase, a model of the current or "As-Is" process is drafted, analysis of the As-Is is conducted and then future process alternatives or "To-Be" processes can be modeled, analyzed for best performer and then the plan for phase 3. This phase is the focus of research performed in this thesis.

- Phase 3: Planning Process Integration phase

    - This phase is designated for drafting a plan for integrating the new process alternative for smooth, seamless integration of the new process into the current organization.
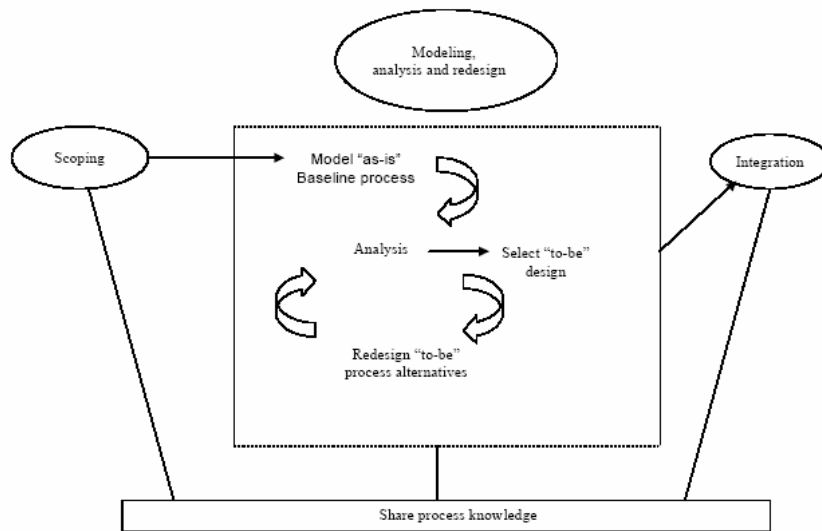
Figure 10.   Phases of Business Process Redesign (From: Ref. 22).

A large portion of the information in this chapter was derived by utilizing the processes included in Phase 2. While the KVA methodology of Housel and Bell was used to capture the knowledge in each sub-process, El Sawy's BPR phase approach assisted with determining when the knowledge should be captured. The methodology and theories of both Housel and Kavesky for KVA and El Sawy for BPR were used in defining the As-Is and the To-Be for NMCI account management.

E.   DEFINING THE CURRENT PROCESS FOR ACCOUNT MANAGEMENT

This section provides the supporting research data and shows how the KVA methodology and BPR principles were used to perform data collection, model the As-Is process, capture the value added within the process, and analyze and diagnose the current NMCI account management process. All of the core sub-processes involved in account management were examined and evaluated against one another to determine which sub-processes provided the least return on the knowledge utilized. It was discovered during the initial stages of research that there was no written policy or guidance provided to the customer technical representatives (CTR), and therefore, no standardized process existed for account management.   For the purpose of this thesis, the terms technical representative and account manager are used synonymously.

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1.   Data Collection

The focus of the data collection was to obtain information that would prove valuable to understanding the current process for managing accounts before making recommendations on improvements.   The researcher determined that using BPR principles from El Sawy would prove to be most beneficial when defining the current process and making recommendations for changes in the process.

While there was no standardized process for account management across all of the USN RC, the researcher expected to find a common, standard process amongst the USN RC regions of which a good estimation could be made to perform the KVA analysis. However, the research found that there was not even a standard process amongst the USN RC regions. The scope of the data collection was limited to capturing the current process for USN RC account management.   It was assumed and verified through phone interviews that capturing the account management process for the USN RC would likely be a good representation of the process for the United States Navy Active Component (USN AC) as well.

2.   Collection Methodology

To begin data collection, phone and personal interviews were conducted with the Commander Navy Reserve Force Command (CNRFC), Command Information Officer (CIO) to identify and prioritize his concerns with the NMCI account management process and their effect on the USN RC organization. The purpose of the interviews was to fully understand the concerns surrounding account management. The CIO's concerns were as follows:

- That the U.S. Navy Reserve Component should not be paying for a person's account who is no longer affiliated with the organization due to the following status:

  - Deceased, separated, retired, transferred to active duty, etc.

- That maximum utilization should be made of the two free accounts that accompany each unclassified seat;

- That the U.S. Navy Reserve Component should not be paying for duplicate accounts (not to be confused with valid multiple accounts required for someone's job or position); and

- That the U.S. Navy Reserve Component should not be paying for an account that should be the responsibility of another command outside of RESFOR's claimancy.

While the interviews with the CIO provided high-level information about the USN RC concerns, additional phone interviews were required with the lead of the Enterprise Account Management Working Group (EAMWG) to provide more detail about the account management process and to understand the business rules better. The results of the conference calls provided further insight on the problems within the process; the high-level dynamics of the IT systems used for account management; the budgeting process for NMCI; and a general overview of some of the major business rules.

A follow-on conference was required with the USN RC CIO and the subject matter experts to clarify the account management process. This call made it possible to glean information about the vision for the allocation of accounts; the amount currently spent on additional accounts (approx. $35M/year) that exceeded the total free accounts that accompany a seat; the estimated total of accounts currently not required; the use of the Network Enterprise Tool (NET) as the IT solution for account and seat management; the use of eMarketplace for budget reconciliation and invoice validation; the role of an Assistant, Deputy, and primary Customer Technical Representative (A/D CTR); the process for submitting a Move-Add-Change (MAC) request; and how Contract Line Item 0024s (CLIN 24s) are determined and assigned.

The results of these meetings required a clearer understanding of how account management is accomplished at the Echelon III, IV, and V levels before proceeding. It was decided that a visual demonstration of the account management process from inception to completion was required to completely understand the necessary actions in account management before designing the As-Is process. A visit to the Navy Reserve Center (NRC), San Jose assisted in clarifying the numerous sub-processes. The visit made it possible to see how the management of accounts was performed, to view the required enterprise IT systems, to review the NRC's process and the IT systems used locally; and to capture the estimated time to learn to perform each of the sub-processes.

The research concluded that, after seeing the total lack of mandatory standardized sub-processes, it would be critical to create a survey to sample a small percentage of commands randomly from the different RESFOR regions and various echelons (ECH) to understand their approaches to account management. The survey questions are included in Appendix B. The survey contained questions that would assist with calculating the learning time, the number of core sub-processes that are involved in NMCI account management, the time to execute each sub-process, to differentiate between the manual and automated sub-processes; and how many times each sub-process is performed in a week. A total of thirty-six commands were randomly selected to complete the survey. The survey completion sample consisted of the following commands:

- 1 CTR from CNRFC;
- 4 Navy Air Commands (3-ECH IV's and 1-ECH V);
- 3 REDCOMs (South, Mid-Atlantic, Southwest); and
- 28 ECH V REDCOM commands (4 ECH V's for each of the 7 REDCOMs)

While the sample size consisted of thirty-six commands, only thirty-three of them responded (91.6%). A review of the survey responses concluded that thirty of the thirty-three responders provided data that was useable. The survey successfully captured account management trends across the various regions; the time to complete each sub-process; and the learning time involved in each sub-process.

3. The AS-IS Process

Information collected during the interviews and surveys as well as observation of the process during the site visit made it possible to devise several sub-processes that appeared to be common across the regions and formulate them into the As-Is model. The purpose was to establish the boundaries between the core scenarios and sub-processes and ultimately use the KVA methodology to identify and value the knowledge required for each. While the scenarios specifically address DRILLRES and FTS, it is assumed that any of these processes pertain to civilian personnel as well. Figures 11-14 depict four unique scenarios associated with account management. Note that perforated lines around any step of the process indicate that all technical representatives do not consistently perform the process. The scenarios are:

- Drilling Reservist (DRILLRES) or Full Time Support (FTS) personnel reporting to the Navy Reserve Activity (NRA) or from a command not on the NMCI network;

- DRILLRES or FTS transfers from the current command to another command that has cutover to NMCI;

- DRILLRES or FTS depart the USN RC by way of retirement, leaving the USN RC for another branch of service; and

- NRA overall seat and account management process including monthly account and asset reconciliation.

F.   "AS-IS" PROCESS FLOWCHARTS

1.   Scenario 1
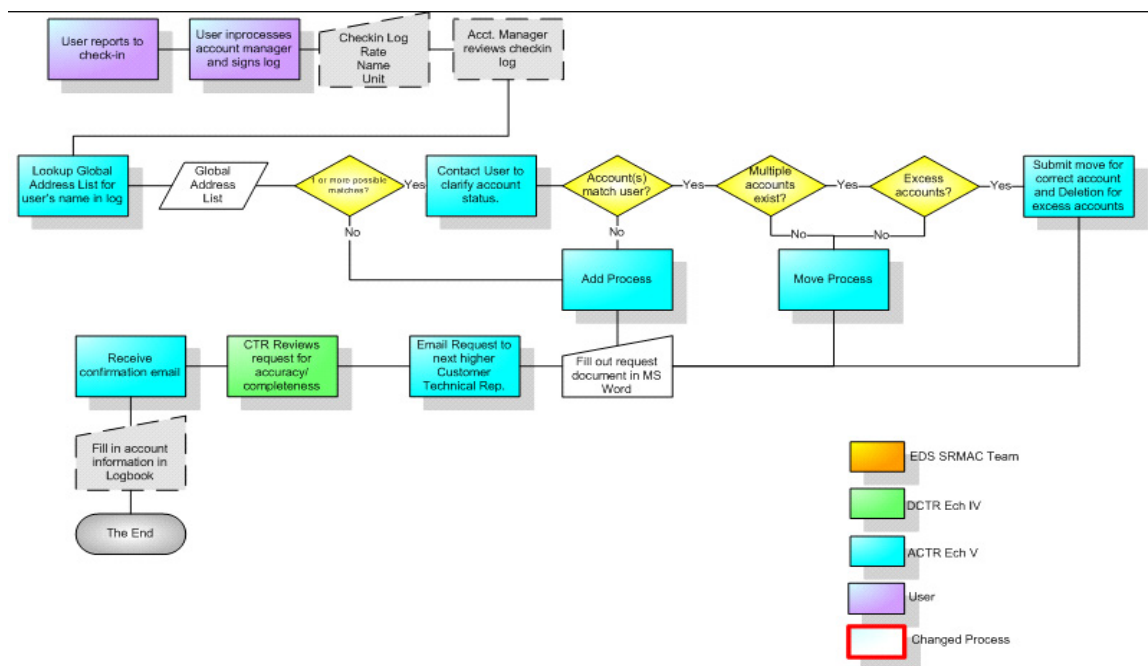
Figure 11.   As-Is Flowchart When a New DRILLRES/FTS Reports for Duty.

The first scenario shows the process flow for DRILLRES or FTS personnel that are either new to the USN RC or that are transferring from a non-NMCI command. The check-in process is as follows:

1.   The User reports to the command for initial check-in. Initial check-in is usually performed through a command indoctrination process or through the manpower department. This process is typically a manual process.

2.   The User in-processes with the NMCI Account Manager (ACTR/DCTR/CTR) and the manager make a manual entry to a local logbook for tracking purposes.

3.   The technical representative annotates the User's name and rate as well as the command unit that the User is assigned in the manual logbook.

4.   Once all new Users are logged, the technical representative will review the check-in log and begin to take action. There is normally a significant time lapse between when the User was entered into the logbook and when the technical representative begins to act upon the log entries (sometimes the technical representative will wait until the next business day after a Drill Weekend (DWE). In other words, this step in the process is not routinely completed while the User is with the technical representative.

5.   The technical representative will look in the Global Address List (GAL) for the User's name annotated in the logbook.

   a.   The technical representative contacts the User if one or more names are found in the GAL that possibly matches the name of the User. Time delay is embedded here, as this process is not completed when the User initially performs the check-in process with the technical representative.

   b.   If one or more of the accounts in the GAL match the User, then the technical representative verifies whether those accounts are multiple accounts or duplicate (i.e., excess) accounts.

      i.   If the account(s) are verified to be a duplicate (or excess), a MAC request is submitted to "move" one of the accounts to the new command and a request is submitted to "delete" any additional accounts. This request is forwarded by completing a MS Word template document and sending it to the authorized submitter (or DCTR) usually via email. The document is then reviewed by the authorized submitter (or DCTR) for accuracy and completeness. The authorized submitter then forwards it to the NMCI Help Desk for action. The help desk forwards a confirmation email to the authorized submitter and the initiating technical representatives once the request has been completed. The initiating technical representative will then make a manual entry in the local logbook that includes the new User's account information.

   c.   If none of the accounts in the GAL matches the User, a MAC request is submitted to "add" the user to the NMCI network. This request is forwarded by completing a MS Word template document and sending it to the authorized submitter (or DCTR) usually via email. The document is then reviewed by the authorized submitter (or DCTR) for accuracy and completeness. The authorized submitter then forwards it to the NMCI Help Desk for action. The help desk forwards a confirmation email to the authorized submitter and the initiating technical representatives once the request has been completed. The initiating technical representative

will then make a manual entry in the local logbook that includes the new User's account information.
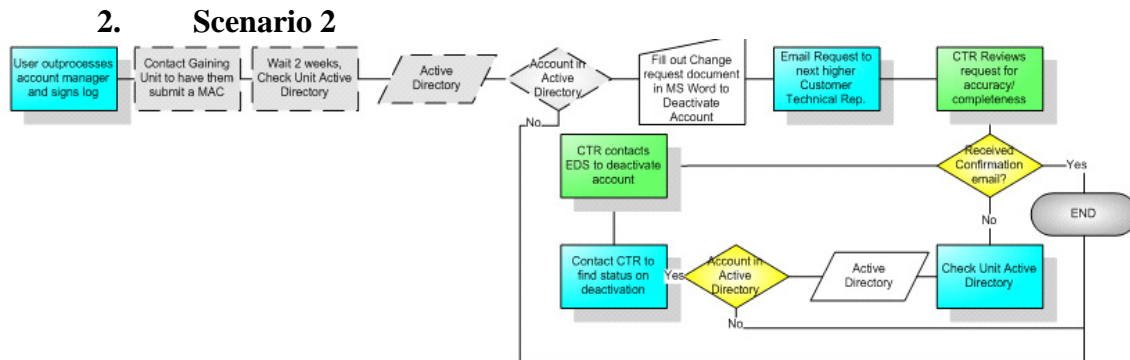
2.   Scenario 2

Figure 12.   As-Is Flowchart When an FTS/DRILLRES Transfers.

The second scenario shows the process flow for DRILLRES or FTS personnel that relocate from one command on the NMCI network to another command on NMCI. The checkout process is as follows:

1.   The User out-processes with the NMCI Account Manager and the manager makes an entry into a manual logbook for tracking purposes.

2.   The local technical representative contacts the gaining command of the User to have them submit a MAC to "move" the existing account to the gaining command.

3.   The local technical representative waits approximately two weeks to give the gaining command time to transfer the command.

4.   At the end of the two-week wait period, the local technical representative checks the command's Active Directory to confirm that the account has been transferred.

   a.   If the account is still in the local command's Active Directory, the losing command's technical representative will then submit a MAC request to "deactivate" the account.   This request is forwarded by completing a MS Word template document and sending it to the authorized submitter (or DCTR) usually via email. The document is then reviewed by the authorized submitter (or DCTR) for accuracy and completeness. The authorized submitter then forwards it to the NMCI Help Desk for action. The help desk forwards a confirmation email to the authorized submitter and the initiating technical representatives once the request has been completed. The initiating technical representative will then make a manual entry in the local logbook indicating that the action was completed.

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b.   If confirmation email, which verifies that the action was completed, is not received, the losing command's technical representative will continue to check the command's Active Directory for a completed action. A continuation of no action prompts the technical representative to contact the authorized submitter to check the status of the MAC request. The authorized submitter will then contact the contractor Service Request Management (SRM) team or the help desk to facilitate the request. This process continues until the confirmation email is received annotating that the requested MAC was completed.

3.   **Scenario 3**
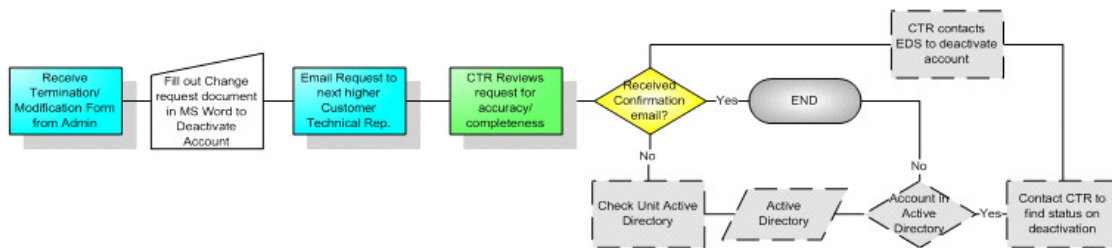
Figure 13.   As-Is Flowchart When an FTS/DRILLRES Retires.

Scenario three illustrates the process flow for DRILLRES or FTS personnel who are retiring, leaving military service, or transferring to a non-NMCI command. The checkout process is as follows:

1.   The technical representative receives a monthly command termination/modification form from the administrative department.

2.   After verifying the User's status, the local technical representative submits a MAC request to "deactivate" the account.

3.   This request is forwarded by completing a MS Word template document and sending it to the authorized submitter (or DCTR) usually via email.

4.   The document is then reviewed by the authorized submitter (or DCTR) for accuracy and completeness. The authorized submitter then forwards it to the NMCI Help Desk for action.

a.   No further action required by the technical representative if a confirmation email is received stating that action was completed.

b.   If confirmation email, which verifies that the action was completed, is not received, the losing command's technical representative will continue to check the command's Active Directory for a completed action. A continuation of no action prompts the technical representative to contact the authorized submitter to check the status of the MAC request. The authorized

submitter will then contact the contractor SRM team or the help desk to facilitate the request. This process continues until the confirmation email is received annotating that the requested MAC was completed.

4. Scenario 4
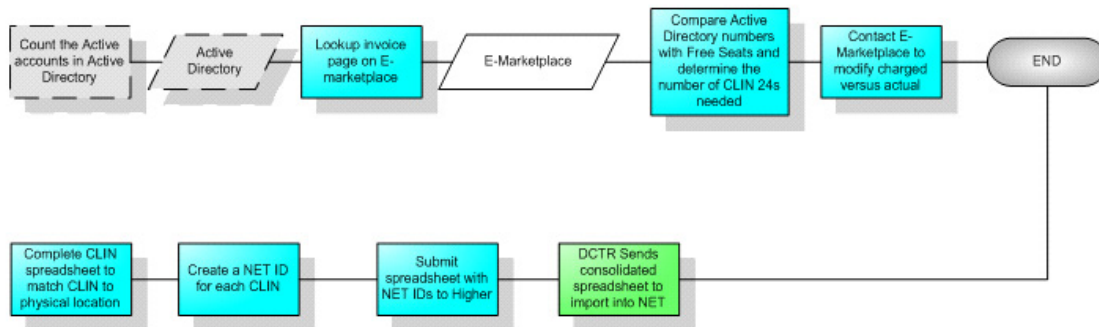
Figure 14.   As-Is Flowchart for Allocation of Accounts and Seat Management.

Scenario four illustrates the process flow for overall management of NMCI seats and accounts. This illustration is important to show because is provides a visual flow of the various systems that must be used for daily account management. The top process flow is for accounts and the bottom is for seats. The processes are as follows:

a.   Accounts

1.   The technical representative counts the number of active accounts that exist in the command's Active Directory. This yields the total number of chargeable accounts that should be included on the billing invoice.

2.   Once a month, the technical representative accesses eMarketplace to view the monthly invoices.

3.   A comparison is then made with the totals counted from the Active Directory and the total number of "free" accounts that are derived from each seat to determine the number of CLIN 0024's required.

4.   The technical representative contacts the contractor to request modifications to charges on the billing invoice to reflect the actual accounts in the Active Directory.

b.   Seats

1.   The technical representative locally generates a CLIN spreadsheet that contains a list of all NMCI hardware and its physical location. This list is used to populate the NET database.

2.   The technical representative (or authorized initiator) forwards the consolidated list via email to the authorized submitter for review of accuracy and completeness.

3.   The authorized submitter forwards the consolidated list for import of data into NET.

4.   A seat identification (SeatID) number is assigned to each piece of NMCI standalone hardware. The SeatID is a NET generated number assigned to each seat entered into the NET database. Every asset considered a seat in NET is assigned a SeatID. Any peripherals attached to a seat do not have its own SeatID, but any peripheral that is ordered as stand alone hardware is given its own SeatID.

G.   KNOWLEDGE VALUE ADDED IN AN NMCI ENVIRONMENT

1.   Time Required to Learn a Process

Time and resource constraints dictated the use of the Learning Time methodology to calculate the KVA for NMCI account management. In this method, the amount of knowledge embedded in a process is represented as the amount of time necessary for an average person (i.e., a common reference point, "learner") to learn how to complete the process correctly. Since the researcher was unable to compare results to those of the process description or binary query method, the researcher used correlation between the nominal learning time (NLT) and actual learning time (ALT) to determine the reliability of the estimate: The terms are described below.

- Actual Learning Time – is the estimated time required for the average person to learn each core process. It answers the question of how long it would take to train someone to perform each sub-process. It represents the value created in each of the sub-process and calculated in the numerator of the ROK formula. The ALT numbers were calculated from site visits and phone interviews.

- Nominal Learning Time – is a second estimate of the knowledge required to perform the core processes and is obtained from a second source. It is a measure of time it takes to learn each sub-process given only 100 total hours to complete learning of all sub-processes. For instance, sub-process "Create Add User to User Log" requires the average learner to use .5 hours learning time out of a total of 100 hours.

Housel and Bell state that the goal of using both estimation methods is to obtain a correlation of 80% or higher between them. A lower correlation would indicate one of the estimations contains some kind of inaccuracy and will need to be reworked. If the numbers correlate well, one could assume some statistical validity between the two different estimates obtained from different sources.

The data collection to perform the initial analysis can be concluded upon gathering the number of command units involved in the overall process (in this case, it is the number of command units involved in performing account management); the number of people involved in each sub-process per command unit; an accurate count of the number of times the knowledge is executed during a sampling period (in this case, one week); and the time it takes to execute each core process (called Time to Complete). To assist in ensuring that the knowledge estimates are accurate, it is important to avoid overestimation --knowledge should only be counted when in use, that is, when it is being actively utilized to perform a particular sub-process or process.

2. KVA Calculations

a. Assumptions

- Except where noted, all command units utilize the same overall process and sub-processes for account management.

- The number of persons completing each sub-process is an average taken from actual survey data.

- Times Fired is an average number of times that each sub-process was completed by a single technical representative in the sample period of a week. This average was then converted to number of times fired in an hour for purposes of comparability. The data used to derive this average came from the surveys.

- Time to Complete is the average time it took a single technical representative to complete one instance of the sub-process. This average was derived from survey data.

To calculate the "benefit" stream for each sub-process, the ALT (hours) was multiplied by the Times Fired/hour times the Average # People completing the sub process. This provided the number of units of knowledge generated by a single command unit for the sub-process for the sample period. This was then multiplied by the total number of command units to obtain the total units of knowledge generated by all commands for this sub-process. Figure 15 provides a partial illustration of the use of this formula in the NMCI process. (J= C x D x F x H)

Figure 15.   KVA Total Benefits Calculation Example.

For the purposes of this particular analysis, a surrogate was used for actual unit cost due to the difficulty of obtaining actual cost data for so many moving parts within the allotted time frame. To estimate this surrogate for unit cost, it was agreed that the number of hours that it took to complete a sub-process (Time to Complete) was a reasonable equivalent to the actual dollar unit cost since dollar unit cost is the wages/hour paid to complete the sub-process. Once a unit cost surrogate was selected, this was multiplied by the Times Fired/hour times the Average # People completing the sub process and finally by the total number of command units to obtain the total "cost" of the knowledge generated by all commands for this sub-process. Figure 16 provides a partial illustration of the use of this formula in the NMCI process. (K= C x D x F x G)

Figure 16.   KVA Total Costs Calculation Example.

3.   Metrics

In order to glean meaningful insights from the KVA analysis, it was necessary to build a performance ratio for the sub-processes. For this ratio, ROK was used. The ROK calculation used the standard formula:

$$ROK = \frac{K}{C}$$

where:

K = Knowledge generated by a single core process

C = Cost assigned to Time to Complete a single core process, or surrogate for cost assigned

The actual calculation for "Create Add User to User Log" is as follows:

$$ROK = \frac{3.45}{.8625}.$$

This ROK is 400%, meaning that there are four units of knowledge generated for every unit of knowledge "cost." In other words, for every hour that it takes to complete this sub-process, it requires four hours of Learning Time.

Once the ROK ratios for all sub-processes were completed, it was determined that they were too inflated to provide helpful insights. Thus, the decision was made to lower these ratios by a divisor of 25 throughout, so that more meaningful comparisons could be

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made. Using a common devisor assists with getting the percentages to fall between 1% and 100%. Decimal numbers that fall below 1% and any ratios greater than 100% can easily be assessed as they standout from the predetermined percentage range. If every number in a series is divided by the same divisor, the proportional relationships between those numbers remain intact.

4.   Analysis of Results

To provide an in-depth analysis of the results, some ranges of performance for the ROK ratios were established. All sub-processes below 10% ROK were the first line of investigation for process reengineering. All sub-processes between 10% and 20% ROK were the second area of investigation. Once Categories 1 and 2 were reviewed, the focus fell on Category 3 (ROK over 20%) to see whether it was possible to build more efficiency or effectiveness here as well.

Category 1 – ROKs of less than 10%: the amount of automation vs. the amount of manual labor involved was examined. Then, the amounts of "wait time" built into the sub-processes were reviewed, e.g., did a sub-process require the CTR to wait prolonged periods to receive a response. Also investigated were the IT systems used to see if streamlining was needed and whether too many systems were required to accomplish a given task. It was clear that the sub-processes yielding a less than 10% ROK were heavily manual, included long "wait times," and required multiple inputs into various IT systems.

Category 2 – ROKs between 10% and 20%: the same methodology as that for Category 1 was followed. Note that in this Category, many of the sub-processes were locked in place due to business rules that required them to remain in effect. An example of this was Sub-Process 5 – REDCOM Approval. All four Category 2 sub-processes, with the exception of the REDCOM Approval, were manual sub-processes and could be automated without losing valuable data.

It was also discovered that both Category 1 and Category 2 sub-processes included many redundancies that could be consolidated or eliminated by better process design.

Category 3 – ROKs over 20%: Although the returns were high by comparison with the other sub-processes, it was noted that the technical representatives were required

to utilize several IT systems to accomplish otherwise automated tasks. This meant that time was consumed on switching systems that could have been used in producing outputs.

Globally, the ROK analysis made it possible to understand that there was no fully integrated central data repository that an "actor" or technical representative could actually use to accomplish account management. In addition, it was found that not all technical representative had been trained to use all the systems they were expected to utilize and often technical representative were not even using these systems at all, whether trained for them or not. It was evident from all these investigations and the ROK analysis that serious reengineering of the account management sub-processes was needed.

Figure 17 shows the complete KVA analysis.

NMCI "AS-IS" PROCESS

COG	Subprocess	# Command Units Involved	Average # People Involved (per unit)	Times Fired (occurrence per week)	Times Fired (per hour)	Time to Complete (hours)	ALT (hours)	NLT (hours)	Total Benefits ($Units Involved*$People Involved*Times Fired*ALT)	Total Cost (Manhours Expended) (# of Units*$People Involved*Times Fired*Time to complete)	ROK (normalized)
NRA ACTR	Create Add User to User Log	184	1.5	5	0.125	0.025	0.1	0.5	3.45	0.8625	16.00%
NRA ACTR	Review User Log and check for existing accounts	184	1.5	5	0.125	0.05	0.1	0.5	3.45	1.725	8.00%
NRA ACTR	Contact User to determine need for multiple accounts	184	1.5	2.5	0.0625	0.5	1	0.5	17.25	8.625	8.00%
NRA ACTR	Fill out Request Document (MAC) in Word, submit via Email	184	1.5	9	0.225	0.16	4	15	248.4	9.936	100.00%
REDCOM DCTR	REDCOM approval (authorized submitter)	14	1.5	118.29	2.957142857	0.08	0.32	2	19.872	4.968	16.00%
SRMAC	Active Directory Creation and Exchange Profile	10	5	80.00	2	0.5	5	15	500	50	40.00%
NRA ACTR	Update Logbook with User Status	184	1.5	9	0.225	0.08	0.32	5	19.872	4.968	16.00%
NRA ACTR	Assign User to seat in local tracking sheet	184	1.5	9	0.225	0.33	0.32	2	19.872	20.493	3.88%
NRA ACTR	Check Unit Active Directory for Acct Termination	184	1.5	5	0.125	0.04	1	1	34.5	1.38	100.00%
REDCOM DCTR	Contact EDS to check delete/move status	14	1.5	24	0.6	1	0.3	1	3.78	12.6	1.20%
NRA ACTR	Contact User's Prospective Command to advise/request MAC submission.	184	1.5	1.25	0.03125	1.5	0.75	3	6.46875	12.9375	2.00%
NRA ACTR	Look up Invoice Page on Emarketplace and compare with Active Directory numbers.	184	1.5	0.25	0.00625	3	16	26	27.6	5.175	21.33%
NRA ACTR	Contact Emarketplace to report excess accounts (billed accounts not needed)	184	1.5	0.25	0.00625	0.5	1	1	1.725	0.8625	8.00%
NRA ACTR	Track Equipment Purchases through manual inputs of hardware and physical location into CLIN spreadsheet.	184	1.5	1	0.025	3	8	26	55.2	20.7	10.67%
NRA ACTR	Aggregate CLIN spreadsheet and send to NET website	14	1.5	9.076923077	0.226923077	0.04	0.04	2	0.190615385	0.190615385	4.00%
	TOTALS						38.25	100	961.6303654	155.4231154	24.75%

CORR 91%

Divisor 25

Condition Formating color Legend for ROK #'s:
red is number < 10%
yellow is number 10% >= 20%
green is number > 20%

Figure 17. KVA As-Is Analysis.

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The current use of IT was factored into the learning of each of the sub-processes as most of these sub-processes are performed by entering data into a myriad of electronic IT systems or applications. In analyzing the As-Is process, it was concluded that the issue was not the lack of IT, but rather the lack of integration between all the different electronic systems and applications used to manage accounts. The systems included the NMCI Enterprise Account Management Tool (NET) to manage seats but contained limited functionality to manage accounts; eMarketplace to validate the monthly billing invoices; Service Request Electronic Form (SR eForm) for daily MAC submissions and management; MS Outlook for confirmation of MAC submissions and completions; the Global Address List (GAL) to verify the establishment or disestablishment of accounts; and a multitude of local applications (i.e., locally generated MS Excel spreadsheets and MS Access databases) assist in storing all the data gathered from the various systems in one location. Active Directory is used very little when performing the required monthly validation of invoices.

It is also important to note that not all processes are electronic. Many of the technical representatives have created manual logbooks in an effort to manage the status of MACs from creation to completion. Also noteworthy is that the SR eForm was not fully functional for MAC management at the beginning of this analysis. Instead, the ACTRs submitted all requests requiring the contractor's intervention via email to the DCTR, and the DCTR in turn, forwarded them to the SRM team. The ACTR's inability to demonstrate proficiency in using the SR eForm during the site visit was evidence that it was not used to manage all MACs, and more importantly, that the users received little or no training on its functional attributes.

The results of the As-Is analysis made it possible to develop a proposed To-Be solution for each of the four scenarios previously mentioned. The "To-Be" process flow and KVA were determined and developed by building a demonstrable web-based prototype. This prototype website integrated the functionality and processes included in the myriad of IT systems previously mentioned. The website also includes easily accessible on-line help and training information to the technical representatives. Figures 18-21 illustrates the recommendations for near-term changes in the current system and account management business processes. Each of these corresponds to their counterpart

scenario in the As-Is process. As noted by the red outline or the strike through the middle of the process or application, several of the current sub-processes will be changed or deleted because of the proposed solution. Appendix C provides more information about the prototype website and the functionality included.

H.   "TO-BE" PROCESS FLOWCHARTS

The following figures illustrated the "To-Be" version of the account management process flows. The focus will be less on each individual step, since they were explained in the As-Is, and more on the changes that have occurred in the process scenarios. Note that perforated lines that existed around many of the As-Is steps are now eliminated to demonstrate mandatory completion and consistency throughout the USN RC.

1.   Scenario 1
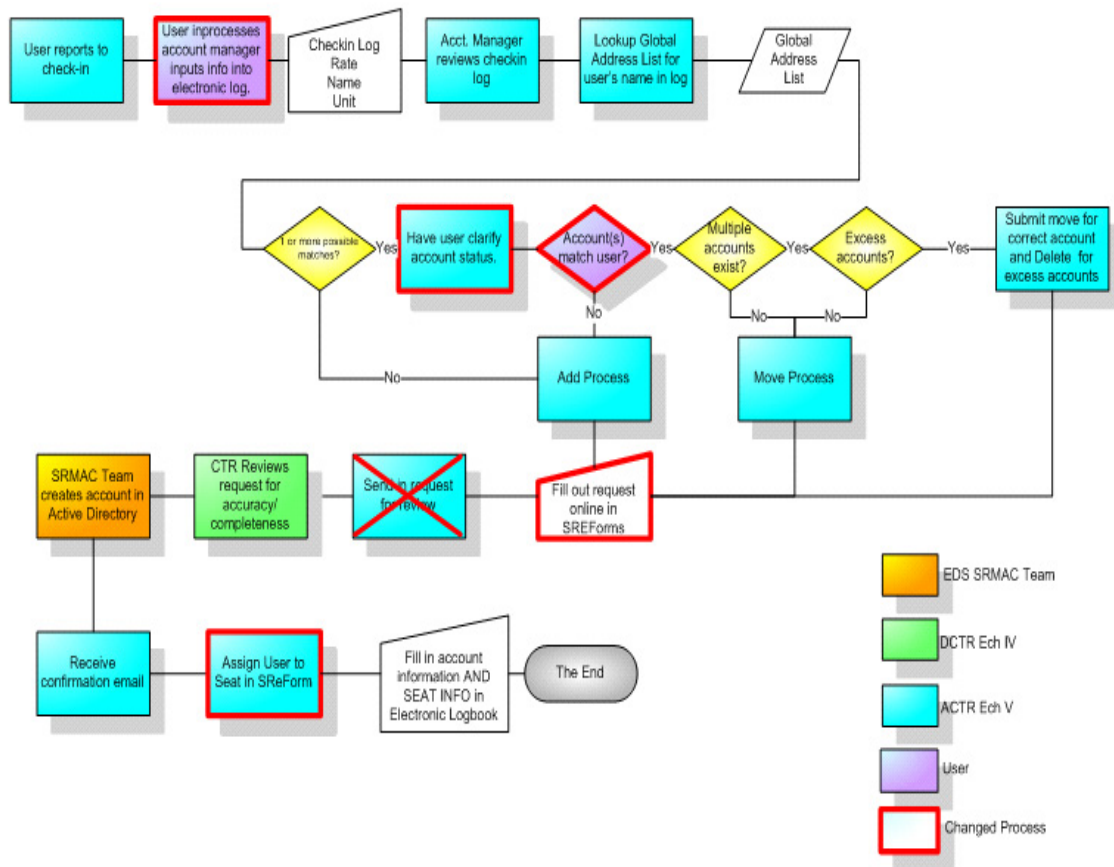
Figure 18.   To-Be Flowchart When a New DRILLRES/FTS Reports for Duty.

The first scenario shows the changes in the process flow for DRILLRES or FTS personnel who are either new to the USN RC or who are transferring from a non-NMCI command. The changes in the process are as follows.

- The logbook entry made by the NMCI account manager when the User in-processes is no longer manual but is now entered into an electronic web-based solution. The User enters all information while still physically working with the technical representative. Researchers of data quality have conducted tests to statistically prove that data-entry errors will be minimized if data is entered by its owner. This entry begins the account verification process. If other account names exist in the central data repository that match the User, the technical representative will receive immediate results of any name match and can clarify the account status while the user is physically present. The functionality will eliminate the time lapse built into the As-Is scenario.

- The integrated website eliminates the requirement to send the MAC request to the authorized submitter to review for accuracy and completeness. Entering of required data by the User, and the incorporation of form field validation in the website design will ensure that the information is complete but does not eliminate the need for the authorized submitter to review the request for accuracy. Once the MAC request has been submitted by the authorized initiator in the integrated web-based system, the request will automatically appear in the in-box of the authorized submitter. The authorized submitter can then verify for accuracy and submit the request directly to the contractor's Service Request Management (SRM) Team for further action.

- To achieve efficiency in time and to achieve the maximum use of the two "free" accounts that accompany each seat, the integrated web-based solution records every seat occupied and unoccupied with the two accounts. Any accounts added are automatically assigned the first available seat. Any accounts no longer in use are automatically unassigned to that seat, and subsequently, account history is automatically stored in the database. This history allows for the instant retrieval of account User data when a new account name matches any that exists in the history file or table. This eliminates the creation of duplicate accounts and would only require re-activation of an account that may have been placed in an inactive status.

2.   Scenario 2
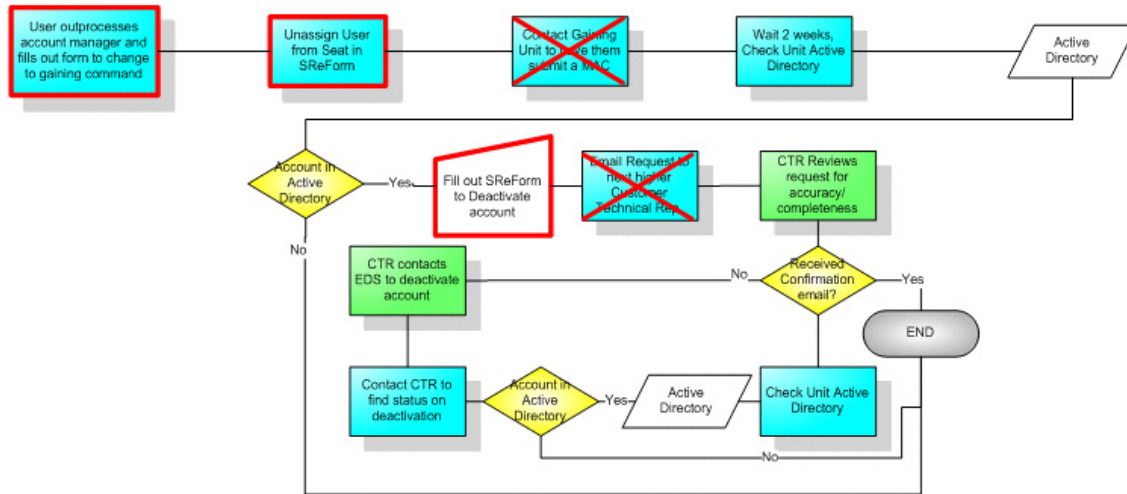
Figure 19.   To-Be Flowchart When an FTS/DRILLRES Transfers.

The second scenario shows the changes in the process flow for DRILLRES or FTS personnel that relocate from one command on the NMCI network to another command on NMCI. The changes in the process are as follows.

- Just as in Scenario 1, the logbook entry made by the NMCI account manager when the User in-processes is no longer manual but is now entered into an electronic web-based solution.

- The technical representative can then automatically unassign the User from the occupied seat by initiating an account transfer from the losing command to the gaining command. Initiation of an account transfer by the local technical representative will automatically submit an account transfer request to the in-box of the gaining technical representative. Automating this process eliminates the need to inform the gaining technical representative that an account transfer is required. Submitting the request does not eliminate fiscal and management responsibility by the local technical representative until the account has been accepted by the gaining command via the integrated web-base tool.

- Management oversight by the technical representative is still required to ensure that the account is removed from the local Active Directory. This requirement does not eliminate the account transfer verification loop that is included in the As-Is, but it does eradicate the requirement to submit the MAC request via email to the authorized submitter.

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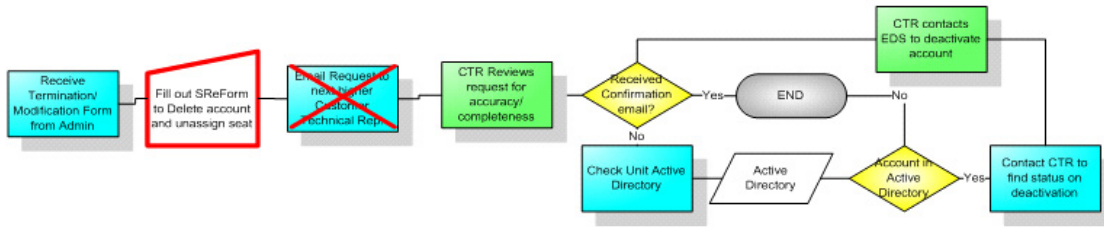
3. Scenario 3

Figure 20.   To-Be Flowchart When an FTS/DRILLRES Transfers.

Scenario three illustrates the changes in the process flow for DRILLRES or FTS personnel retiring, leaving the military service, or transferring to a non-NMCI command. The changes in the process are as follows.

- The integrated web-based data repository eliminates the need for the technical representative to complete the MS Word document and submit the MAC request to the authorized submitter via email. Once the request is entered in the web-based tool, it is automatically sent to the authorized submitter and awaits action in the in-box.

4. Scenario 4
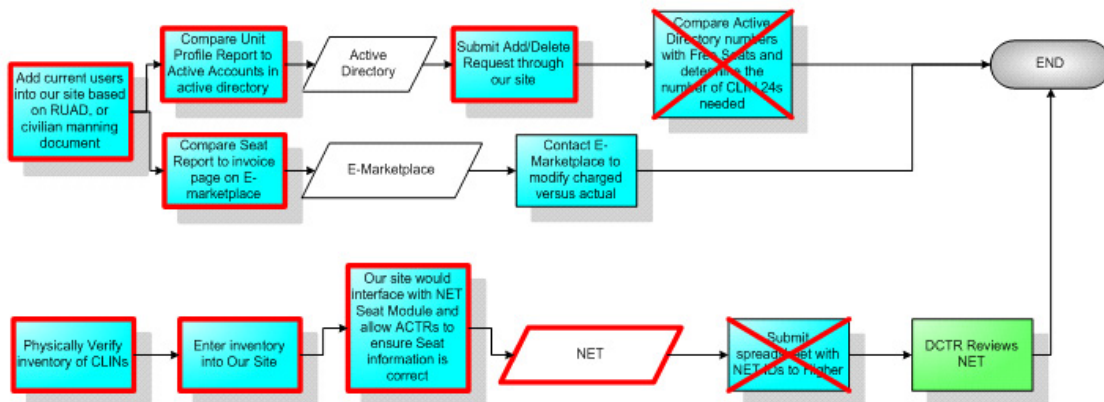
Figure 21.   To-Be Flowchart for Allocation of Accounts and Seat Management.

Scenario four illustrates the changes in the process flow for overall management of NMCI seats and accounts. The scenario illustrates that most of the sub-processes included in the As-Is are now modified to include the use of the web-based integrated central data repository with NET and eMarketplace. Again, the top process flow is for accounts and the bottom is for seats. The changes in the processes are as follows.

a. Accounts

- Initially, the technical representative would ensure that all current NMCI users are entered into the integrated web-based management tool. By using automated reports that could be generated and exported from the web-based tool, the technical representative would perform a comparison between the active accounts in the Active Directory and the system generated report. Any disparities or MAC requirements would be submitted directly through the integrated web-based tool. There would not be a need to compare the Active Directory numbers manually to the "free" seats to determine CLIN 0024s as the account-to-seat allocation would be system generated. Likewise, the system would automatically calculate any account requirements that exceeded the "free" accounts that accompanied each seat by providing a sum total of required CLIN 0024s.

- The web-based tool is sophisticated enough to generate a report that contains accumulated seat and account data with similar data output fields that exist in eMarketplace. This would enable the technical representative to generate a report through the web-based tool and compare it with the eMarketplace invoice.

b. Seats

- Ensuring that actual seat data match what exists in NET since NET is currently the management tool of choice. The integrated web-based tool allows technical representatives to perform a physical inventory of their existing assets, enter the findings in the web-based tool, and provide an interface with the NET seat module to provide easy and automated import of data between the systems. The interface between the prototype web-based tool and NET would eliminate the requirement to submit any modifications via a spreadsheet to the authorized submitter.

5. Data Analysis Comparison

The principles of KVA and BPR were used to recommend modifications and to achieve efficiencies in the account management process. It was decided that addressing the ROKs that met the criteria for Category 1 above would provide the most immediate return as manual processes would be automated thus decreasing the time to complete the sub-process. Additionally, the desire was to capture as much knowledge in the heads of people and embed it in the IT system when feasible. The numbers included for the "To-Be" Time to Complete and the Actual Learning Time are based on the testing and evaluation of the prototype web-based solution, and not just professional judgment.

While adding automation did eliminate most manual processes, it also required additional sub-processes to compensate for the automation. The KVA shows an increase in the ROK in several of the sub-processes. The ROK increase is attributable to an

increase in knowledge embedded in the IT systems, as smarter IT systems require less knowledge of the process in the minds of the account management actors, to the merging of several processes into one, the elimination of manual sub-processes, and a decrease in the time to complete each of the remaining sub-processes. The following sub-processes were eliminated with the use of automation and system integration: Fill out Request Document (MAC) in Word (sub-process row #5) and Aggregate CLIN spreadsheet sent to NET website (sub-process row #19). These sub-process rows are highlighted in grey in Figure 22. As previously mentioned, the following sub-processes were required to be added because of automation and system integration: Fill out Electronic Log Request (sub-process row #4); Verify Unit Information and submit rapid request (sub-process row #8); and Track Equipment Purchases through the new web-based site (sub-process row #18). These sub-processes have a red font color and have a grey highlight in the "Before (from As-Is)" column (column L).

The remaining sub-processes with red font color within the numbers represent those that have been modified with the use of an integrated and automated central data repository. While many interpretations can be made from the data, the data analysis for this section focuses only on the increases or decreases to the Time to Complete, which affects increases or decreases to the proxy "cost" discussed in Section C of this chapter. In other words, the analysis focuses on how the process changes improved the benefit stream and/or the decreased the proxy costs. This is done by comparing the Time to Complete from the "To-Be" to the Time to Complete from the "As-Is". These processes include the following.

- Review User Log and Check for existing account (sub-process row #6). Since this sub-process will be automatically performed through the integrated website, through testing and evaluation, it was determined that automation would yield a decrease in the Time to Complete from 0.05 hours to 0.03 hours. The analysis of the data concluded that the percentage of time to complete was decreased by 40%. $\frac{(0.03-0.05)}{0.05}=-.04$.

Similar comparisons will be made with the remaining processes that have been changed.

- Ask User about need for multiple accounts (sub-process row #7). This sub-process will no longer allow the technical representative to wait until after a drill weekend to contact a NMCI user, but will enable him to ask the user at the time the new NMCI account is requested. Using the same comparison methodology as the previous sub-process, it can be concluded that the Time to Complete was decreased by 94%. $\frac{(0.03 - 0.5)}{0.5} = -.94$

- Assign/Unassigned User to seat in our Site (sub-process row #12). This sub-process eliminates the need for the technical representative to perform unused seat-to-account mapping in their local tracking system (from As-Is, Figure 17, sub-process row #10). The use of automation and system integration automatically finds the first available or unused seat and performs user-to-seat mapping as they are entered. Data analysis yields a 75.7% decrease in the Time to Complete. $\frac{(0.08 - 0.33)}{0.33} = -0.757$

- Contact User's Prospective Command (sub-process row #15). Great efficiency is achieved in this area by using the prototype tool as the process of transferring and the account is mostly system generated. This increases the number of times this process can be completed in an hour and decreases the overall time to complete one instance of the sub-process. Analysis of the data concludes a 94.4% decrease in the completion time. $\frac{(0.083 - 1.5)}{1.5} = -.944$

- Look up Invoice Page on eMarketplace (sub-process row #16). Since all of the data will be integrated into the web-based tool, the technical representative is required only to generate a report and complete the verification. Automating this process drastically decreases the Time to Complete by 83.3%. $\frac{(0.5 - 3.0)}{3.0} = -.833$

KVA provides the data analysis with many options for data comparison within the sub-processes or with overall ROK percentages. The numbers in the spreadsheets listed previously represents a relative comparison between the ROK for the As-Is and the To-Be processes. A relative comparison between the overall ROK totals yield a 6.95% increase in overall efficiency (31.70% - 24.75%=6.95%).

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	NMCI "TO-BE" PROCESS												
2	COG	Subprocess	# of Units Involved	# People Involved (per unit)	Times Fired (occurrance per week)	Times Fired (per hour)	Time to Complete (hours)	ALT (hours)	NLT (hours)	Total Benefits (ALT*People per Unit * # of Units*Knowledge Fired)	Total Cost (Manhours Expended) (Time to complete * people per unit * # of Units)	BEFORE (from AS-IS)	ROK (normalized)
3	NRA	Create Add User to User Log	184	1.5	5	0.125	0.025	0.1	1	3.45	0.8625	16.00%	16.00%
4	User	Fill out Electronic Log Request	184	1	9	0.225	0.16	0.16	0.7	6.624	6.624	0	4.00%
5	NRA	Fill out Request Document (MAC) in Word, submit via Email	184	1.5	0	0	0.16	4	5	0	0	8.00%	0
6	NRA	Review User Log and check for existing accounts	184	1.5	5	0.125	0.03	0.1	0.4	3.45	1.035	8.00%	13.33%
7	NRA	Ask User about need for multiple accounts	184	1.5	2.5	0.0625	0.03	1	0.5	17.25	0.5175	8.00%	133.33%
8	NRA	Verify Unit information and submit rapid requests	184	1.5	1	0.025	0.083	4	15	27.6	0.5727	0	192.77%
9	DCTR	REDCOM approval (authorized submitter)	14	1.5	118.29	2.9571429	0.08	0.32	5	19.872	4.968	16.00%	16.00%
10	SRMAC	Active Directory Creation and Exchange Profile	10	5	80.00	2	0.5	5	14	500	50	40.00%	40.00%
11	NRA	Update Logbook with User Status	184	1.5	9	0.225	0.08	0.32	0.5	19.872	4.968	16.00%	16.00%
12	NRA	Assign/Unassign User to seat in Our Site	184	1.5	18	0.45	0.08	0.32	2	39.744	9.936	3.88%	16.00%
13	NRA	Check Unit Active Directory for Acct Termination	184	1.5	5	0.125	0.04	1	1	34.5	1.38	100.00%	100.00%
14	REDCOM DCTR	Contact EDS to check delete/move status	14	1.5	12	0.3	1	0.3	1	1.89	6.3	1.20%	1.20%
15	NRA	Contact User's Prospective Command to advise/request	184	1.5	0.5	0.0125	0.083	0.75	3	2.5875	0.28635	2.00%	36.14%
16	NRA	Look up Invoice Page on Emarketplace and compare with Active Directory numbers.	184	1.5	0.25	0.00625	0.5	16	23	27.6	0.8625	21.33%	128.00%
17	NRA	Contact Emarketplace to report excess accounts (billed accounts not needed)	184	1.5	0.25	0.00625	0.5	1	3.5	1.725	0.8625	8.00%	8.00%
18	NRA	Track Equipment Purchases through our Site	184	1.5	1	0.025	1	8	24	55.2	6.9	0	32.00%
19	NRA	Aggregate CLIN spreadsheet and send to NET website	14	1.5	0	0	0.04	0.04	0.4	0	0	4.00%	0
20	TOTALS							42.41	100	761.3645	96.07505	24.75%	31.70%

subprocess

CORR: 89%

Condition Formating color Legend for ROK #'s:
red is number < 10%
yellow is number 10% >= 20%
green is number > 20%

Divisor   25

Figure 22.   KVA To-Be Analysis.

I.   CHAPTER SUMMARY

This chapter began by providing detailed information on the theory of Knowledge Management. The definition of Knowledge Management was provided and can be summarized as a set of activities aided by IT designed to help organizations to create, capture, synthesize, deploy, share, preserve, and reuse organizational knowledge more effectively. The section on BPR addressed its phases as defined by El Sawy. The

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evolution of Knowledge Management has constituted what is considered the "second-wave" BPR, which focuses on effectively managing knowledge around business processes. The chapter demonstrated how the process redesign heuristics and the KVA methodology was used to increase the knowledge-creating capacity of the account management process so that it learns more effectively through the interactions of its various participants.

KVA methodology was also used to measure the ROK as a way of comparing how much value different BPR alternatives provide to the account management process. BPR emphasizes the importance of creating value quickly and value can be created through increased knowledge creation around processes. Developing a web-based prototype enabled the testing and evaluation of BPR alternatives and was used to calculate the To-Be process flow for the various defined scenarios. The KVA methodology uniquely enabled the ability to capture and quantitatively measure the amount of knowledge as a common unit of output that exists in each of the sub-processes in managing NMCI accounts. This could not have been accomplished solely with the use of BPR principles. Quantitatively capturing the knowledge, in units of learning time, allowed relative comparisons of the sub-processes and the ROK to be made.

The next chapter provides an analysis of what industry considers successful measures for outsourcing and seat management. It also examines commercial companies that have outsourced their IT resources and the business practices implemented that led to their success. The second half of the chapter reviews best-of-breed COTs tools used by industry to perform enterprise-wide seat management.

V. INDUSTRY STANDARDS FOR OUTSOURCING AND COMMERCIAL-OFF-THE- SHELF MANAGEMENT TOOLS

A. INTRODUCTION

Researchers have documented that information technology (IT) outsourcing has increased enormously over the past decade. This increase has required that outsourcing organizations create and codify standards and best practices that promote sharing strategies and ensure tangible, sustainable results. This chapter discusses some of these strategies based on research conducted by Gartner Inc. and other outsourcing researchers. Included in the chapter are industry best practices for administering and managing information technology (IT) outsourcing contracts.

Previous chapters discussed the lack of an integrated IT solution and its impact on Navy Marine Corps Intranet (NMCI) management. This chapter assesses "best-of-breed" commercial-off-the-shelf (COTS) products used by industry, which could also be used as an enterprise IT solution for NMCI management.

B. INFORMATION TECHNOLOGY OUTSOURCING BEST PRACTICES

Many enterprises, or service recipients (SR), have decided to outsource all, or a portion of their IT functions to increase value and add benefits to the organization. William Maurer of Gartner Research states that some of these benefits are that the organization is allowed to concentrate on core competencies; speed to market is enhanced; change management initiatives are improved; and costs are lowered [Ref. 24]. While IT outsourcing has gained tremendous popularity in today's business environment, more than half of all outsourcing arrangements fail to deliver the expected benefits or value [Ref. 25]. This failure has been attributed to mismanagement of outsourcing endeavors from the establishment of the sourcing plan to the management of the contract after it is awarded. The following sub-section discusses the widely-accepted four phases of strategic outsourcing. While there are many forms of outsourcing deals, a phased-approach, focused on IT utility sourcing contracts, will be discussed since it is relevant to the NMCI environment.

1. Four Phases of Strategic Outsourcing

Gartner Research has studied the behaviors and practices of outsourcing strategies as well as its methodologies. They have recognized that most organizations lack the skills required to manage the outsourcing relationship with external service providers (ESPs) once it has been established [Ref. 26]. To assist with the process, Gartner states that decision-makers need to carefully craft their strategic outsourcing plans to allow for "partnerships" with their ESPs. These partnerships will enable businesses to become more agile with their customers and the changing requirements of the organization [Ref. 26]. Establishing a partnership is not something that occurs suddenly, but should be revealed by using an evolutionary approach, which Gartner refers to as the four phases of strategic outsourcing process. The phases of the strategic outsourcing process shown in pictorial form in Figure 23 are:

- Sourcing Strategy
- Evaluation and Selection
- Contract Development
- Sourcing Management

This process has become the industry standard for outsourcing as it takes enterprises from the initial decision, to strategic outsourcing, and through ongoing management of the partnership during the life of the contract. The process considers future objectives, new opportunities, and the potential for change [Ref. 26].

Figure 23.   Strategic Sourcing Process (From: Ref. 26).

a.   Phase 1: Sourcing Strategy

Phase 1 begins with the questions of business strategy and goals. Knowing the goals and direction of the organization enables senior leadership to

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determine which services would be handled most effectively through outsourcing. Jennifer Beck, Gartner Research analyst, states that most organizational leadership agree that one of the biggest challenges in outsourcing is aligning IT with the business strategy [Ref. 27].

During this phase, organizations should carefully define and closely analyze their enterprise and evaluate the risks and benefits of outsourcing. They should clearly understand what is required in the final contract at award and consider what is preferred throughout its duration. Selection of vendors should be cautiously made as any outsourcing partnership formed solely on present circumstances is not thinking strategically and could be doomed for failure. Vendors should also be selected based on their ability to meet the strategic goals of the organization. This will establish a context for well-timed future success.

Figure 24.   Phase 1: Sourcing Strategy (From: Ref. 26).

b.   *Phase 2: Evaluation and Selection*

Phase 2 empowers senior leadership to define its requirements and identify potential partners that can meet the organization's business needs. Organizations should evaluate potential service providers by establishing guidelines regarding contract flexibility and cooperative decision-making that will govern the final contract. A decision framework for evaluating and selecting vendors is also included in this phase of the strategic sourcing life cycle.

There are several ways that vendors can be selected but two of the more popular means is through Request for Proposal (RFP) and Single-Source.

Gartner Research states that soliciting vendor interest by using the RFP approach "invites about five to twelve service providers to respond to the requirements

stated RFP. It then attempts to uncover key differences among the service providers"
[Gartner Research in Ref. 26]. The negative aspect of this approach is that service
providers submit boilerplate responses as a result of cost-of-sale and opportunity-to-win
concerns among the many respondents. The RFP approach usually requires the longest
timeframe and more is expensive than the Single Source approach.

The Single Source approach invites one service provider to develop an
offer. Selecting a vendor using this approach is usually driven by an existing relationship
the vendor may have with the organization. In government organizations, the single
source approach must be accompanied with justification. It is often used when there is a
need for unique skills, tools, or technology. Services that are limited by time constraints
also warrant the use of the single source approach. Although this approach may seem to
shorten the negotiation process, it can also lengthen it or establish an inequitable
agreement when the service provider desires certain contract terms and when the service
recipient is anxious to close a deal [Ref. 26]. In addition, the lack of competition among
service providers can also remove incentives for the selected provider to offer the
purchasing organization the best terms and services.

Realistic expectations about costs and service benefits should also be
realized during this phase. Gartner believes that only when a decision is made on these
elements can the search for a service provider proceed successfully and efficiently.

Figure 25.   Phase 2: Evaluation and Selection (From: Ref. 26).

c.   *Phase 3: Contact Development*

Phase 3 assists users in constructing the proper contract based on their
needs and negotiating the appropriate deals with the vendor. In this phase, the SR and

service provider (SP) structure a flexible partnership with defined service levels and payment models by negotiating a realistic and effective contract. "Hammering out the details of performance measures and terms that are flexible enough to withstand changes during the course of the partnership is crucial" [Ref. 26]. Many IT outsourcing contracts were awarded based on misunderstandings about cost. The initial costs may look appealing because surcharges are buried in the details for later years and the cost of managing the partnership over time is rarely taken into consideration.

Performance measures must be made clear and a realistic assessment of the true costs in the contract must be made. Equally important, the contract terms should be flexible enough to withstand the inevitable changes that take place during the course of a partnership.

Figure 26.   Phase 3: Contact Development (From: Ref. 26).

d.   *Phase 4: Outsourcing Management*

The fourth phase involves project management once the contract has been awarded. Since the outsourcing process does not end after the contract is signed, the partnership between the SR and SP must be maintained as a living, breathing entity. It must be monitored and nurtured to ensure that the conditions of the contract are met and modified as the business requirements change. As shifts in capacities, needs and opportunities to innovate occur, the partnership should use benchmarking to make sure it is aware that change is taking place. To foster a healthy working relationship, both parties must consider these changes when reassessing the terms of the contract. Gartner believes that this is the only way to keep the partnership fresh and alive.

Figure 27.   Phase 4: Sourcing Management (From: Ref. 26).

There are many ways to determine whether the SP is providing an organization the service it desires and meeting its expectations in a sourcing contract. Industry has defined some of these as qualitative determinants and some can be measured quantitatively. The focus of the research in the following sub-sections includes two well-known quantitative approaches to measuring contract performance, benchmarking and service-level agreements. It is believed that these two approaches provide the most value to an enterprise.

2.   Benchmarking

Today's business requirements dictate that organizations be flexible and possess an ability to change at a moment's notice and that change must be institutionalized quickly and effectively. Benchmarking is one of a number of quantitative approaches to ensure that an organization and the SP are maintaining the agreed upon levels of organizational change and are prepared for possible reevaluation of contractual courses of action.

When defining the requirements of the IT resources to be obtained through outsourcing, it is not practical to set absolute standards for performance in an environment of continual change.   A common alternative is benchmarking. Benchmarking is defined as a minimum industry based standard that must be met and serves to take into account changes in technology [Ref. 28]. It is a way for the SR and SP to validate their relationship and prove SP value over time [Ref. 24]. Setting benchmarks for the requirements not only accommodates technology advances, but also allows for monitoring contractor compliance with the requirements to keep up with technological changes [Ref. 28].

For SRs seeking to understand how well their sourcing relationship is performing, a comprehensive benchmarking program can be critical to the continuing success of the outsourcing relationship. Identifying and monitoring areas of strength and weakness facilitates a proactive dialogue between an SP and its SR and helps ensure that the strategic goals of the SP and SR are known, aligned, and remain achievable during the course of the relationship [Ref. 24]. In the benchmarking process for an outsourcing engagement, the SP price and SR retained costs are combined and compared to a peer group of organizations with similar complexities and workloads. A process is put in place to ensure the peer groups selected are truly comparable and the quantitative comparisons developed are defensible. William Maurer et al. state that this process is an assessment of risk transfer that is accepted by the SP at the time the two parties engaged in the relationship during Phase 3 of the Strategic Sourcing process. The risk transfer in most outsourcing contracts consists of items such as responsibility and control; service-level agreements; and contractual recourse through penalties.

William Maurer indicates that an SR/SP benchmark must place a value on these risk transfer elements and ensure that they are accounted for in peer group comparisons [Ref. 24]. Assigning value and accountability can occur in one of two ways: "the peer group can consist of similar outsourced engagements, or a peer group of organizations with similar workloads and complexities" [Ref. 24]. Once a valid peer group is identified with the appropriate level of risk transfer factored into the equation, the comparison of price plus retained costs can be made. Using these comparisons will likely reveal opportunities for improvement, illustrate where the relationship falls according to industry comparisons, and provide the SR with a level of awareness on whether they are getting the most 'bang for their buck.'

Outsourcing theorists believe that benchmarking can change the relationship and the pricing strategies between the SR and the SP. While benchmarking provides a marketplace price and service comparison, it also provides a certain level of comfort that any the long-term agreements will remain aligned with the market conditions. The rapidly changing IT environment requires the consideration of annual benchmarking to ensure that the pricing and services are also modified with the changes in the marketplace conditions.

3. Service-Level Agreements

As the number of organizations outsourcing IT functions continues to grow, these organizations are constantly seeking ways to reduce cost and improve service in their outsourcing endeavors. One of the lessons learned from outsourcing is the critical need to establish performance monitoring and have the right service levels, both of which are considered subsets of performance management. This provides visibility into the SP's performance, ensures that service levels support the continuous attainment of business objectives, and drives the desired SP behavior [Ref. 30]. Performance management is broadly defined as "the activities and processes needed to determine if the contract is being satisfactorily executed" [Ref. 29]. More specifically, it is the process of monitoring vendor performance against the contractual requirements.

Performance management can be categorized as either strategic or tactical. Strategic performance management is concerned with higher-level organizational goals including overall costs, schedules, and performance goals. Conversely, tactical performance management is concerned with the SP's performance against the specific itemized services. For this reason, tactical performance management is routinely categorized as "service level performance management." [Ref. 29]

Performance measures are commonly used to determine whether a SP is meeting the performance standards established in the contract. These measures can be both quantitative and qualitative. However, the most effective measures are quantitative. By definition, performance measures should be specific, objective, and verifiable to minimize the opportunity for dispute. Additionally, they should include only items that are the sole responsibility of the SP, to minimize disputes pertaining to task ownership. It is often beneficial to bind incentives and/or penalties to the performance measures. This emphasizes their importance to the organization while encouraging the SP to exceed the organization's expectations.

Many IT contracts include performance measures ingrained in the description of service levels and defined and managed through the use of service-level agreements (SLAs). A SLA is defined as a "contractual tool keyed to the customer's expectations" as SPs and organizations decide which services will be provided and what will be the

criteria for measuring their success and failure [Ref. 31]. In essence, a SLA is a contractual commitment to meet specific goals and includes a pre-defined performance monitoring methodology. The advantages associated with incorporating SLAs into an outsourcing contact include providing the organization and the contractor with a baseline to measure performance, and establishing a method for allowing payments (via incentives and/or penalties) to be tied to performance, service quality, and customer satisfaction.

William Maurer et al. have stated in their research that the foundation of incentives and penalties lies within the service-level agreement (SLA) portion of the outsourcing contract [Ref. 32]. They further state that "Service-levels should be set to the minimum acceptable level of performance required to meet the enterprise business objectives. For the service levels to qualify as an SLA and, therefore, an effective foundational tool for managing the outsourcing relationship, the service levels — when not met by the ESP — must be subject to contractual penalties." In their research, they indicate that IT management best practices dictate that service levels must meet the criteria of a five-step process to qualify as a valid and usable measurement tool. The five-step process is:

- Define the required service levels to ensure maximum effectiveness and meet minimum business objectives.
- Measure service activity results against the defined service levels.
- Examine the results for problem determination and root cause analysis.
- Take appropriate corrective action.
- Continuously guide service activities to hold the gains achieved by the corrective action taken.

While a variety of performance measures can be used, basic measures should cover vendor response time, system availability, and system downtime. Also, to be effective, SLAs should be developed with a focus on such areas as completeness, reporting functions, change management, and consistency [Ref. 33]. Completeness refers to outlining all of the functions that are monitored. A common error in writing SLAs is specifying too many services to measure. It is important to note that every service or function does not necessarily require its own SLA. An effort should be made to measure those services and requirements that are deemed critical to organizational success and those that provide the most value to its customers. This objective is met by consolidating

requirements and measurable services so the total number of SLAs is as low as possible without eliminating or overshadowing the critical requirements.

Reporting functions include reports that are used to judge performance, how frequently they are generated, and who will receive them [Ref. 33]. The two categories of reporting for SLAs are real time reporting and periodic reporting. The purpose of real time reporting is to allow clients to know the status of the service or network. Prompt notification should be provided to the organization when problems occur. This notification should include the cause of the problem, the impact, and the plan for resolution. Periodic reporting (most common in SLAs) refers to historical metrics on actual service performance that are then compared to the contract requirements.

Change management involves considering the dynamics that accompany any IT network project and require portions of the contract to be amended or adapted to address ongoing change. In a network environment, hardware, software, and users are frequently added, deleted, or modified. The SLAs should identify how such changes will be considered in the performance requirements and performance measures.

Consistency addresses the idea that SLAs tend to be complex and lengthy; therefore they should be written to ensure that common terms are used in a consistent manner both within the SLA and across the enterprise to achieve semantic harmony.

Maurer, Scardino, and Young have written that to develop a set of effective business-based service levels, organizations must use a prescribed service-level selection methodology based on clarity, rigor, and consistency. The selection methodology includes:

- Functions – defining functional categories that will be measured. This section should include any production support required to ensure that the system produces the expected results. Also included are user support activities to ensure questions are answered, and problems are researched and user assistance is provided. Lastly included in this section are maintenance and enhancement requests.

- Activities – clearly describing activities in the functional categories mentioned in the Functions category. The Activities section provides greater technical and measurable detail for each area.

- Service-level components – identifying common service levels seen in various outsourcing engagements

Gartner has developed a list of the 100 most common service levels used by enterprises. The following is an example of how a SLA for Customer Satisfaction might be developed. [Ref. 32]. Table 2 provides an illustration of completed descriptions of several service levels that apply to Customer Satisfaction [Ref. 30].

- *Category:* Customer satisfaction — ongoing

- *Explanation:* Measures performance of a specific function, such as help desk call resolution or desktop problem resolution. Explanations are used to identify end user's opinion of service performance. The results are used to identify and resolve any issues and problems. The resulting actions should improve end-user/management satisfaction and service performance.

- *Service level:* Establish that 92 percent are very satisfied or satisfied. It is important to note that the customer satisfaction process will not start until six months after contract initiation and project/activity initiation.

- *Responsibilities:* Measure customer satisfaction on a daily basis by taking less than 5 percent of daily activities and completing a customer satisfaction record per documented processes and procedures. The sampling should be spread over the various functional areas.

- *Assumptions:* Survey will be completed via direct voice contact or via e-mail. End users will take part on a volunteer basis.

- *Measure formula:* The following formula is valid for the daily and monthly reporting periods: The number of responses with a "very satisfied" or "satisfied" rating divided by the total number of responses equals the percentage service level attained.

- *Data sources:* An ESP-provided tool that provides documentation capabilities will be used to meet the reporting requirements.

- Incentive or penalty formula: Variable

Category	Requirements	Quality	Service Level	Measurement Formula
Application break/fix Priority 1	Restore functionality of critical applications	Less than 2 percent rework after completion and implementation of fix	Two business hours resolution for on-shift 96 percent of the time. Twelve business hours resolution for off-shift 96 percent of the time	Time that the critical application is down, beginning with notification and ending with user acceptance. Downtime less than or equal to two hours equals SLA met. (Weight factor plus all other downtime incidents divided by the total number of incidents must be greater than 96 percent.)
Application break/fix Priority 2	Restore functionality of the application	Less than 2 percent rework after completion and implementation of fix	48 business hours resolution for on-shift and off-shift 94 percent of the time	Time that the critical application is down, beginning with notification and ending with user acceptance. Downtime less than or equal to 48 hours equals SLA met. (Weight factor plus all other downtime incidents divided by the total number of incidents must be greater than 94 percent.)
Application break/fix Priority 3	Restore functionality of the application	Less than 2 percent rework after completion and implementation of fix	Seventy-two business hours resolution for on-shift and off-shift 90 percent of the time	Time that the critical application is down, beginning with notification and ending with user acceptance. Downtime less than or equal to 72 hours equals SLA met. (Weight factor plus all other downtime incidents divided by the total number of incidents must be greater than 90 percent.)

Source: Gartner Research (November 2004)

Table 2.　Service-Level Examples (From: Ref. 26).

4.　Successful Organizational Outsourcing Engagements

Many articles have been written to highlight unsuccessful outsourcing deals, but less fanfare is given to the successful ones. The following subsections describe two successful IT outsourcing partnerships and provide information regarding key factors in their success.

a.　City of Chicago Partner with Unisys and Acxiom

With a newly elected mayor leading the charge, the City of Chicago wanted to make some changes in its business practices to increase its effectiveness for its citizens and efficiency in its operation. The Mayor was looking for non-strategic services that would be a prime candidate for outsourcing so that its employees could focus on core business processes. At the request of the Mayor, Gartner conducted an IT user satisfaction study to establish a baseline of how well its internal IT resources were providing IT services [Ref. 35]. The City's score of 2.87 on a scale of 5.0 confirmed that the City was performing less than satisfactorily and fell below the industry average

benchmark of 3.56. This score illustrated that establishing an IT outsourcing partnership to manage the City's key IT functional areas and assets could provide significant value to the City's strategic objectives.

The City of Chicago partnered with Unisys and Acxiom to increase service levels for its customers and to assist with controlling costs. Acxiom was responsible for the mainframe outsourcing and the related functions such as tape and disk storage subsystems, database support and batch and online application management. Unisys acquired oversight for help desk support, desktop and network management, and asset management and maintenance. Unisys' direct contact with end users required the company to demonstrate that it could improve the customer satisfaction rating as well as the service levels [Ref. 35].

This commitment to improvement by Unisys was evident in its aggressive approach and unparallel concentration to improve its services to the City. The partnership began to reap the benefits that accompany IT outsourcing deals quickly as Unisys established a centrally managed helpdesk where all the problems or services are received and a follow-up and feedback loop for all helpdesk support, and constructed an on-site team to provide desktop, application and network support. Additionally, they created a Program Management Office for management of on-site personnel and for addressing any outstanding issues that may arise from key city officials [Ref. 35].

Acxiom implemented hardware migration and consolidation efforts and relieved the City of their print and mail responsibilities. They gained responsibility for a host of other IT functions that were performed by the City of Chicago staff.

These modifications, along with the additions and modification made by Acxiom, enabled the City of Chicago to realize exponential improvements in customer service and customer satisfaction. A follow-up survey revealed that 80 percent of the respondents were satisfied with the improved service-level. Additional benchmarking was performed to provide quantifiable measures on performance and outsourcing services.

The Mayor credits the success of this partnership to several critical success factors and lessons learned [Ref. 36]:

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- With an outsourcing agreement, the organization must set reasonable expectations and not sell the outsourced services as a panacea that will fix all of the problems quickly.

- Develop strength around contract vendor management. The retained staff members need different skills to manage the outsourced contracts than was required internally to manage employees and address operational problems.

- Incorporate end users in the process from the beginning, but expect and accept resistance to the change.

- The vendor use of an on-site project management team is helpful and can ease the transition process.

- Use service-level agreements that are focused on time, cost and quality, such as closed call time, end-user satisfaction and network/application performance.

- Develop a contract that encourages gain sharing. If the vendor can bring in new innovation and agree to share some of the cost savings.

- Cultivate CEO-level support. It is essential that the top executive be committed to the outsourcing effort to ensure enterprise cooperation.

- Pick vendors that will be long-term partners. If the vendors are not committed to working with the organization as a partner, the relationship will become a deal without flexibility and will grow stagnate over time.

b. *Nike Partner with Lockheed Martin*

Nike and Lockheed Martin developed an outsourcing partnership in April 1999 where Nike would relinquish management and ownership responsibilities for its internal Corporate Information Technology services [Ref. 34]. Nike desired to outsource its Information Technology (IT) services at a time when it was decreasing in market-share so the creativity and talent of its personnel could ultimately focus on the core athletic businesses while enhancing competitiveness through greater focus on product superiority and customer service. These services include desktop support, data center, network management, help-desk services, and technical asset management operations.

Bert Liverance, Director Global IT Operations for Nike, indicated that the key to the success of his Nike's outsourcing endeavor was realizing that a good outsourcing relationship takes work. As the relationship matures, periodically it makes sense to take the time to evaluate the performance and objectives of your partnership. Check the alignment and all the vital connections. For no matter how good the

relationship is, there is always room for improvement. Timely identification of these opportunities helps to ensure a strong ongoing relationship [Ref. 34]. Liverance further attributes the partnerships success to development of a process to evaluate and benchmark the outsourcing relationship to drive performance improvements. By realizing that any relationship will not reach perfection at its inception, both parties agreed that a procedure to determine and measure the qualitative and quantitative characteristics of the relationship was necessary. Finally, as Nike's business requirements changed, the partnership and certain aspects of the contract needed to be dynamically linked to prevent stagnating Nike's competitive edge.

C. COMMERCIAL-OFF-THE-SHELF APPLICATION ANALYSIS

The increase in the use of IT systems and web-based technologies has forced organizations to change the way they conduct business. They must now find new ways and new tools to control access to organizational resources securely. Additionally, organizations must be able to manage increased security risks associated with the escalating volume of user administration. To succeed in these areas, a comprehensive and integrated security solution must be built into their networking strategy.

While there are many applications and resources that can assist in building a more secure network, an Identity and Access Management (IAM) solution is believed to be ideal for use in minimizing duplicate accounts, the need for multiple accounts, and thus increase CLIN 0024's in the Navy Marine Corps Intranet (NMCI) networking environment. Enterprise IAM can be defined as a set of processes and technologies to manage user objects more effectively and consistently over relatively large numbers of systems and directories [Ref. 36]. When fully integrated with the network, an enterprise IAM solution is best as it eliminates multiple accounts by assigning multiple user identities and roles to a single account. It also enables administrators to establish security settings to disallow the creation of a duplicate account based on the user's credentials. The enterprise IAM solution has a host of other functionalities that will not be mentioned in this thesis, but should be reviewed to appreciate and gain full benefit of the power this solution possesses.

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1. Overview of Identity and Access Management

Identities are pieces of information that identify a user's existence [Ref. 37]. To allow users to utilize and benefit from the many applications and services offered, organizations of all types assign identifiers, or unique codes, to individuals in order to represent their uniqueness to the organization and easily map to applications and services. Individuals take on multiple roles using these identifiers as their digital identities as they traverse through the organization. These identities, or roles, may change depending on the task, but the uniqueness maps back to the original identifier of the user.

Managing user identities and identifiers across an enterprise has become crucial to network security as leaner staffs are now required to take on several roles to meet the organizational mission. The proliferation of identities has also increased the need to manage access to organizational assets. Success in managing organizational assets depends on the integrity, confidentiality, and privacy of its information and processes with the ability to audit governance, compliance, and use [Ref. 37]. Organizational systems today have become easily accessible creating the need to implement fine-grained, policy-based protection to protect their mission-critical data and services. Additionally, identities need to be managed to facilitate the right access to the right resources or users. Without properly managing these identities, a user may be given access to applications or resources that were not deemed necessary for the performance of his or her job. Organizations must ensure they control and audit the process of issuing a user credential, or allowing access to files, databases or Internet services. Effective identity and access management should consider a single view of all activities, such as user management and policy management, or creating a new user account. This will eliminate the need for the use of multiple consoles or applications when adding, modifying, or deleting users or specific information about the user, the user's role, or identity.

2. Identity and Access Management Tools

Many IAM tools combine several functional components to create a best-of-breed solution. This solution provides maximum business value by integrating these components, yet making them interoperable with components from other vendors or with custom-developed applications [Ref. 36]. Organizations are then enabled to choose a

fully integrated solution from a single vendor (called a suite), to combine selected components from different vendors that will work together (the real benefit of best-of-breed), or to phase in the pieces of a complete IAM solution using an evolutionary approach. Many IAM solutions include provisioning, policy enforcement (security), and end-to-end auditing to assist in ensuring that all aspects of the identity life cycle are securely and efficiently managed [Ref. 36].

Provisioning is defined as "the automation of business-oriented work flow of systems, resources, services and devices to employees, partners, contractors, suppliers and temporary workers." [Ref. 38] User provisioning is the process for managing user identity enterprise-wide and beyond. User provisioning encompasses the identification of:

- The types of users an organization will manage
- The systems, application, and other business resources those users will need to access
- The levels of access to those resources users will need
- How the organization will create, update, and delete user accounts
- How the business will guarantee secure access to its resources

Provisioning of user objects, monitoring of all activities, reporting of all transactions, and de-provisioning (or un-assigning) of user objects are fundamental concepts of user life cycle management [Ref. 38]. Organizations need to manage digital identities across the entire enterprise, and securing access to files, directories and databases while monitoring all of these activities with an end-to-end audit. Where provisioning differentiates from standard manual practices is that when user access is no longer required, access rights to all systems, devices, files and so on are terminated.

Provisioning would be very ineffectual without the implementation of security management. The fundamental business process for which work flow is dynamically generated must support the organization's security policies and business practices for which the provisioning of users is being conducted [Ref. 38]. With the use of this technology, the user information can be used to create a profile of a person or role that indicates exactly what resources should be allocated to the person or role. Any changes made to the profile can automatically trigger provisioning or de-provisioning activity

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with little interaction required from the manager [Ref. 38]. When a user moves to another command unit, all of the necessary work flow items would start and proceed to the reassignment of provisioned items, based on approvals received and any external systems, for instance the Human Resources department or military Manpower division.

Most organizations desire to maintain a history of the types of events that have occurred when managing a user account. Performing auditing functions using the provisioning system helps ensure that all events and activities associated with identities or resources are tracked. Auditors can see "when an identity was created, who created it, where the identity went, what it accessed, what it touched, into what it morphed, when it was suspended and by whom, and when it was terminated" [Ref. 38]. Auditing services tracks all provisioning activity across the entire enterprise and extended enterprise.

While an analysis of a multitude of vendors that advertised their IAM solution was conducted, only a couple truly demonstrated a solution that was integrated and contained the IAM capabilities mentioned above. These two companies, Computer Associates and IBM, are currently considered industry leaders in IAM technology. Of the two, Computer Associates offered the most comprehensive solution, which included not only the tools mentioned above, but also a wealth of additional easy-to-integrate components that could further enhance the network management experience.

D. CONCLUSION

This chapter provided a detailed analysis of industry accepted and best practices associated with IT outsourcing contracts. It outlined Gartner's phased-approach to outsourcing, called the Strategic Sourcing process, and explained the importance of benchmarking and performance management in fostering successful partnerships in Phases 3 and 4 of the process.

In particular, it expressed the importance of creating and monitoring SLAs using the following guidelines. Align outsourcing service levels to the business requirements; use the minimum number of service levels required to ensure satisfaction of the business requirements; ensure that financial, penalties, and incentives are included and that they align with the business requirements of the deal; and use a consistent approach when measuring performance via service levels. While it is clear that establishing the

performance measures for an outsourcing contract is a daunting task, it is perhaps the most critical challenge to outsourcing success performed in Phases 3 and 4 of the Strategic Sourcing process. The two successful outsourcing endeavors included in this chapter confirms that careful SLA development, incorporating benchmarking into the contract and a host of other factors are imperative to ensure the success of the partnership.

While there are several point products (or multi-vendor solutions) that could be used to tackle the NMCI account management challenge, it is recommended that an integrated IAM solution be considered to assist with account and access provisioning and management.

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VI. CONCLUSION AND RECOMMENDATION

A. INTRODUCTION

This chapter provides a summary of the previous chapters by furnishing answers to the primary and secondary research questions presented in Chapter I. Additionally contained within this chapter are conclusions developed from the analysis of the Navy Marine Corps Intranet (NMCI) account management process and the associated challenges. The resulting research and analysis enabled the author to make clear and concise recommendations on specific areas of improvement to minimize additional costs, improve effectiveness, and maximize value within the enterprise.

B. RESEARCH QUESTIONS

As outlined in Chapter I and subsequently addressed in the preceding chapters, the answers to the research questions are represented in the following paragraphs. This section will include answers to the secondary research questions while the primary research question will provide a high-level answer in this section with a more detailed solution in the sub-section titled "Recommendation".

1. Primary Research Question

a. *How Might the U.S. Navy Reserve Component (USN RC) Effectively Manage Accounts in the NMCI Environment?*

There are several areas outlined in the research that demonstrate process inefficiency and therefore are candidates for change. Some of these include the definition of "the enterprise;" the coupling of accounts to seats; the current management process which causes the creation of Contract Line Item 0024s (CLIN 0024s) for additional accounts and the generation of CLIN 0026s for Move Add Change (MAC) requirements; and the use of multiple stove-piped Information Technology (IT) solutions. In order to mange not only accounts but the entire NMCI environment effectively, major changes should be considered in the terms of the contract and the corporate business rules. A detailed analysis of the changes and the recommendations for improvement are included in the sub-section titled "Recommendation."

2. Secondary Research Questions

a. *How Were the Accounts Allocated during NMCI Deployment?*

In the beginning stages of NMCI deployment, many commands allocated accounts by creating local processes of assigning accounts to seats. Earlier business rules required that each seat have at least one account assigned, therefore technical representatives were required to list all seats manually and subsequently manually cross-reference personnel accounts back to each seat. Ensuring that each seat had at least one account was a cumbersome process that was labor-intensive and in some cases required multiple personnel to perform. With little guidance and no standardized IT solution, most were required to create manual processes and use whatever IT resources they had locally available.

As the NMCI deployment began to increase rapidly and commands began to cutover at record pace, the Department of the Navy (DoN) slowly began to realize how inefficient the process was and requested the creation of an IT solution to help ease the management nightmare. Over time, several IT solutions were created to handle different functions within the overall process (see Chapter III for more detail). While these systems lighten some of the burden, they created additional layers for the technical representatives and further complicated the overall management process. These additional layers or stove-piped systems required technical representatives to enter data in the NMCI Enterprise Tool (NET) at deployment. Once a command was cutover, account requests and all other service requests were performed using the Service Request Electronic Form (SR eForm). Billing and auditing functions resided in Electronic Market (eMarketplace).

These are considered the corporate or enterprise-level systems, however none of them can be considered an accurate central data repository. With all these solutions, technical representatives are still required to maintain a locally generated central data repository to consolidate and effectively track resources for which they have overall management responsibility.

b. How Are the USN RC Customer Technical Representatives (CTRs) Currently Tracking NMCI Accounts per Region?

Chapter IV provides a detail analysis of the As-Is process for the NMCI account management process. The principles of Business Process Redesign (BPR) as defined by Omar El Sawy and the Knowledge-Value Added (KVA) methodology created by Housel and Bell were used to capture and illustrate the As-Is process and to quantitatively determine the amount of value that each sub-process provides to managing accounts. Surveys, site visits, and interviews were the primary means of data collection in an effort to capture the current process. However, the data collection revealed there is no standardized method for tracking accounts either across the enterprise or within the regions.

While there was no standardized process, four scenarios and numerous sub-processes showed some commonality across the regions and these sub-processes were used to devise the As-Is model. As previously mentioned, the technical representatives were required to use many manual processes such as manual logbooks when in-processing and out-processing Users and phone calls to Users to verify possible name matches in the Global Address List (GAL). Additionally, all requests that required contractor action had to be submitted to the next higher technical representative in the organizational chain of command. At the beginning of this research, these requests were sent via email, but recently the sub-process was modified to allow entry into the web-based SR eForm.

Asset management and some account management were performed in NET while asset and account invoice auditing were performed using eMarketplace. Other systems like Active Directory and the GAL were used to verify account status. While automation has been incorporated into the process, none of the systems have been integrated to allow data to be exchanged seamlessly or synchronized to enable the data integrity amongst all the platforms. This has required the technical representatives to input common data and pull inaccurate data from each system. Currently, the use of multiple stove-piped IT systems (both locally and web-based) have become the IT solution of choice, yet the process continues to be labor-intensive and ineffective.

c. How is the Navy Reserve Forces Command Currently Managing NMCI Accounts for the USN RC?

Chapter IV also provides a detail analysis for this question. When acting in the capacity of an assistant or deputy technical representative (ACTR/DCTR), the Navy Reserve Forces Command has been required to manage accounts using similar processes and the same IT tools identified under the previous question. They have used the same solutions but have had access to a higher-level management view within the web-based systems. Since they have had overall responsibility for all of the USN RC, they have been required to review orders before final submission, make approvals and disapprovals, and forwarded major requests to the contractor. Again, these functions have been accomplished using the same stove-piped web-based IT solutions previously mentioned and by using email and phone.

d. How is the U.S. Navy Active Component (USN AC) Currently Managing NMCI Accounts?

Phone conferences with USN AC representatives in the office of the Director of NMCI confirmed that the USN AC has been managing accounts using the same IT systems and tools used by the USN RC. The process of performing these tasks may differ as there has been no standardized process or policy by either higher echelon command. While capturing the process for the USN AC is out of the scope of this thesis, a similar approach using the BPR principles and KVA methodologies is recommended to understand exactly how the process is performed.

e. How are Some of the Large Commercial Companies, which Have Adopted the Seat Management Concept, Successfully Managing Accounts across an Enterprise Solution?

Chapter V identifies a phased approach to strategic outsourcing and seat management. The approach discussed in this research, called the Strategic Sourcing Process, has become widely accepted by corporate America and has gained recognition as an industry best practice for IT outsourcing. The process outlines four key phases (Sourcing Strategy, Evaluation and Section, Contract Development, and Sourcing Management) and identifies key functions that must be considered in each of these phases. One key aspect of the phased-approach is the establishment and evolution of a true "partnership" between the service provider (SP) and service recipient (SR).

Incorporating active and continuous benchmarking as well as the establishment of clear and concise Service-Level Agreements (SLAs) have proven the key to outsourcing and seat management success. Using benchmarking to determine how well the partnership is working enables the SR to gauge the SP's performance by comparing it to other organizations that are of equal size, complexity, and outsourcing functions. Many corporate companies also equate their success in outsourcing to the development of SLAs. Using SLAs as a contractual measure and monitor of performance to ensure that the contractor meets or exceeds the expectations of the organization is also critical for meeting the mission of the organization. Chapter V provides more information about benchmarking and SLAs and therefore will not be repeated in this section.

f. What are the 'Best-Of-Breed' COTS Products Used by Industry for Account Management?

Although a true enterprise solution that could handle all the functionality required for NMCI management could not be found, the Identity and Access Management (IAM) solution could be used to tackle most of the identified problems associated with managing accounts. An IAM solution is capable of managing user accounts, identities, roles, and directory access across multiple platforms to create a best-of-breed solution. By using provisioning technology to manage user objects, administer digital identities, and to monitor the user's activities and history, the CLIN 0024s created because of duplicate accounts and multiple accounts could be dramatically reduced.

C. RECOMMENDATIONS

This section includes a more detailed response to the primary thesis question "How might the U.S. Navy Reserve Component (USN RC) effectively manage accounts in the NMCI environment?" and the secondary question "What would be a feasible non-technical solution that the USN RC, and perhaps the USN AC, could implement?"

1. The Proposed 'Radical' Solution

To develop the proposed solution, the principles of BPR discussed in Chapter IV and defined by El Sawy were used. Additionally, Housel and Bell's KVA methodology was used to calculate the Return on Knowledge (ROK) for each new or modified sub-process. The specified business rules for the NMCI account management process limit the adoption of many aspects of the To-Be proposed solution in Chapter IV. Therefore, a

'radical' solution has been designed that will dramatically change the manner in which account management is currently performed. Levels of efficiency and costs savings will exponentially increase with the implementation of this proposal.

The 'radical' zero-based review process assumes that the current business rules do not exist and that contracts can be modified based on the following recommendations for drastically changing the account management process:

- **Redefine the 'enterprise' to consolidate the USN AC and the USN RC budgets and NMCI funding and management oversight**. If accounts are to remain coupled with seats, the enterprise should be redefined and accounts should be pooled just as initially intended (see Chapter III). This will allow the USN RC complete access to any unused accounts derived from seats of the USN AC.

- **Overall NMCI management responsibility will reside at the USN Echelon II level, truly demonstrating the "One-Navy" envisioned by senior leadership**.

- **Establish a standard policy for implementation across the claimancy**. The survey results showed that the technical representatives not only need guidance, but have requested that policies and procedures be established.

- **Train the users on how to use the current IT tools and any tools that may be mandated in the future.** Again, the surveys and the site visit revealed that users are not aware of the functionality and procedures of important management tools such as NET, SR eForm, and Active Directory structure. These applications and databases are critical to successful account management and if not used properly, will reduce efficiency and USN RC will continue to incur unnecessary CLIN 0024 and CLIN 0026 costs.

- **Renegotiate NMCI contract to decouple seats from accounts**. Taking into consideration the cost of hardware vs. the cost of an account, contract renegotiation could reduce overall spending on NMCI accounts while simplifying the management process. Attaching personnel (i.e., accounts) to hardware (i.e., seats) in such a dynamic organization as the DoN will continue to be a management nightmare as people are constantly relocating. For example, consider increasing the cost of a seat by what it currently costs to manage the two 'free' accounts. The cost of the accounts would then be decreased to compensate for the increase in seat cost. The cost and the method of calculation should be agreed upon by the government and the contractor. Attaching personnel (i.e., accounts) to hardware (i.e., seats) in such a dynamic organization as the DoN could continue to be a management nightmare as people are constantly relocating.

- **Create an integrated web-based solution, which is thoroughly beta-tested with investments made in the upfront requirement analysis to ensure the solution meets the user's needs. The solution should contain the functional and quality attributes required for overall NMCI management**. This tool should combine all functions of NET, SR eForm, eMarketplace, and any contractor-specific systems. One tool promotes data integrity and ease of management.

- To assist in defining the requirements for such a tool, the author has created a detailed Functional Requirements document that includes not only the required functionality for the government, but also the minimum requirement for the contractor's interface. See Appendix D. Additionally, Appendix E contains a Detail Design document to illustrate a functionality that was included in the web-based prototype of the requirements. Each web-page or view in Appendix E is traceable back to each requirement from Appendix D.

- **Once an integrated system has been created, provide an automatic interface between it and existing legacy databases in Navy Standard Integrated Personnel Systems (NSIPS) or Defense Enrollment Eligibility Reporting System (DEERS) and the civilian personnel management system equivalent.** Make use of a unique identifier such as Social Security Number w/Common Access Card (CAC) to update the management system, Active Directory, and NMCI (in lieu of the current MAC process) automatically as the User transfers from command to command throughout his or her career.

- **Strong consideration should be made in the implementation of the COTS enterprise IAM solutions mentioned in the previous chapter**. These solutions directly address many of the account management issues previously mentioned and could provide an immediate gain in efficiency while decreasing the $35 million paid for additional accounts. IBM and Computer Associates are industry leaders in the IAM solution and therefore should be contacted on the feasibility of implementation.

Implementation of these recommendations would eliminate most account management responsibilities currently performed by technical representatives. The technical representatives would only be responsible for the maintenance and tracking of hardware.

Figure 28 depicts what the process flow would entail if these recommendations were accepted and implemented. As demonstrated, this would significantly simplify NMCI account management and would require little intervention by the users. Again, this recommendation assumes a level of system interface that does not currently exist.
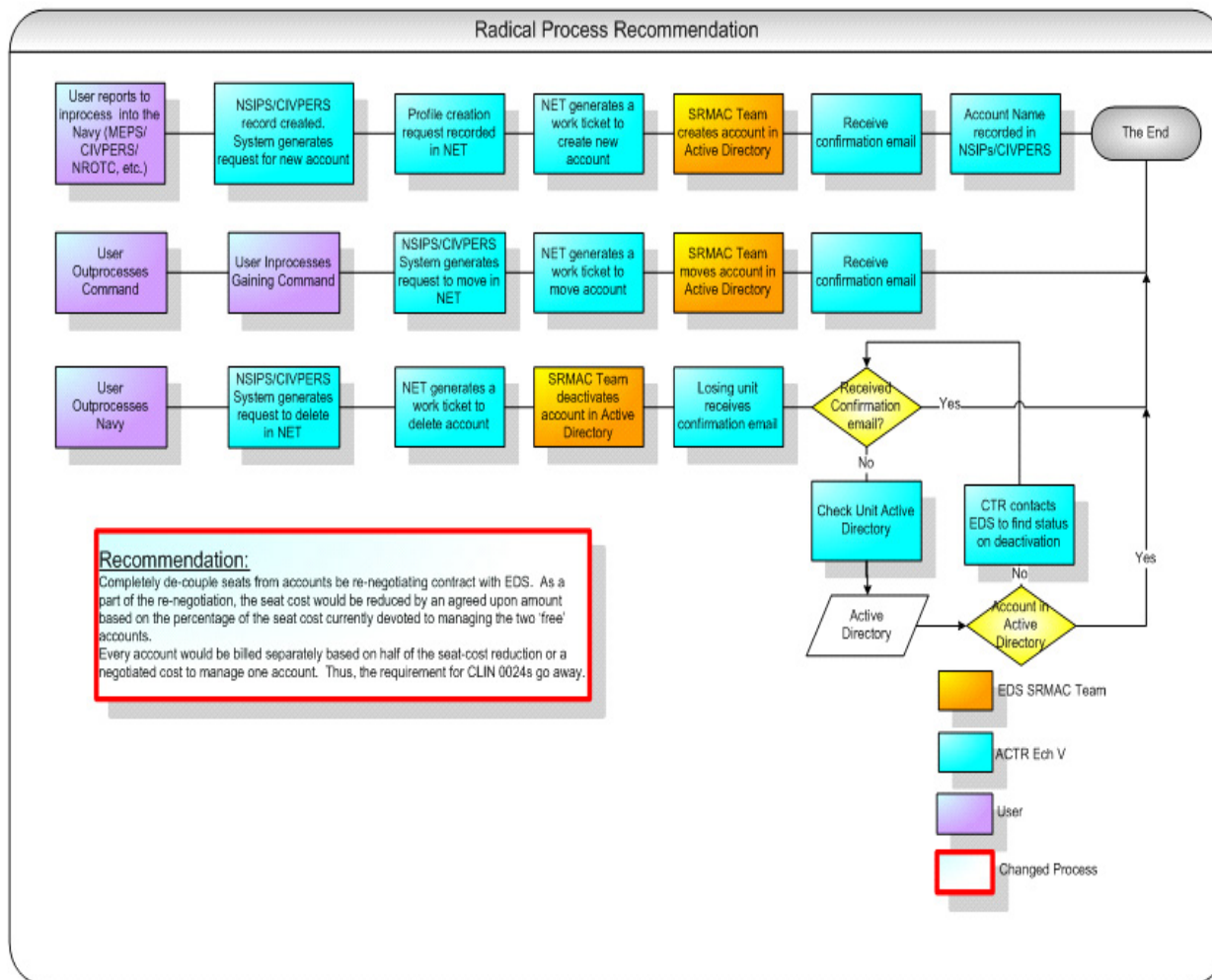
Figure 28.   Radical Process Flowchart.

Figure 29 illustrates the 'radical' KVA analysis based on the proposed process flow in Figure 28. The spreadsheet shows a relative comparison in the ROK between the As-Is and To-Be 'radical' processes. As demonstrated by the grayed rows, most human intervention is removed, which increases the knowledge in the interface between the IT systems and decreases the errors caused in the submission of requests. The relative comparison between the two processes yields an increase in ROK and efficiency of 63% (40.47% /24.75%=63%).

COG	Subprocess	# Units Involved	# Pe... Invol... (per...
NRA	Enter new recruit personal info into NSIPS	184	
NRA	Update NSIPS as user transfers, terminates service, etc.	184	
NSIPS	New user entered into NSIPS prompts automatic generation of new NMCI account	184	
NSIPS	New updated user info prompts automatic account transfer/deletion, as appropriate	184	
NRA ACTR	Create Add User to User Log	184	
NRA ACTR	Review User Log to check for existing accounts	184	
NRA ACTR	Contact User to determine need for multiple accounts	184	
NRA ACTR	Fill out Request Document (MAC) in Word, submit via Email	184	
REDCOM DCTR	REDCOM approval	14	
SRMAC	Active Directory Creation and Exchange Profile	10	
NRA ACTR	Update Logbook with User Status	184	
NRA	Assign User to seat in local tracking sheet	184	
NRA ACTR	Check Unit Active Directory for Acct Termination	184	
REDCOM DCTR	Contact EDS to check delete/move status	14	
NRA ACTR	Contact User's Prospective Command to advise/request MAC submission.	184	
NRA ACTR	Emarketplace and compare with Active Directory numbers.	184	
NRA	Track Equipment Purchases through NET	184	
NRA ACTR	Contact Emarketplace to report excess accounts (billed accounts not needed)	184	
NRA ACTR	Track Equipment Purchases through manual inputs of hardware and physical location into CLIN spreadsheet.	184	
NRA ACTR	Aggregate CLIN spreadsheet and send to NET website	14	
	TOTALS		

Red Font = New subprocess

Condition Formating color Legend for ROK #'s:
red is number < 10%
yellow is number 10% >= 20%

Figure 29.   Radical KVA Spreadsheet.

D.   CONCLUSION

The NMCI account management process has made tremendous progress since the inception of the NMCI network. However, in order for the system to evolve fully, the business rules should include continuous process improvement with the actors (i.e., A/D CTRs) in mind. The users are an important part of the process and they could provide useful recommendations for changes in the process if given the opportunity. Creating a forum or Community of Interest (COI) for them would enable them to express their

concerns and provide beneficial solutions. This COI would be in addition to the Enterprise Account Management Working Group (EAMWG) and/or the EAMWG should include some of the lower-level users in its configuration. The working group must meet often and on a continual basis while providing feedback to senior leadership. This ensures that addressing the NMCI account management issues become and remain a priority with flag-level support.

Developing an integrated enterprise-level tool should be of the highest priority. The research revealed that current stove-piped systems such at NET, SR eForm, and eMarketplace are inefficient and ineffective in their current state. While many reasons for their inefficiency and ineffectiveness could be mentioned in this section, it is more important to note the research showed these systems were neither well developed nor well deployed, therefore contributing largely to the $35 million per year for the last several years for additional, and perhaps unnecessary, accounts. The inability to effectively manage accounts has caused friction between the Service Provider (SP) and the Service Recipient (SR). This strain in the partnership, as well as the findings in this research, has led the SR (the USN RC) to search for creative ways to minimize the additional costs associated with managing accounts as they have started an initiative which will cancel several thousand accounts believed to be in excess. This initiative should force the SP to develop or purchase an automated solution that is capable of performing accurate audits on the allocated accounts. As mentioned in the previous section, a strong recommendation is also made to review and determine a viable enterprise IAM COTS solution that can be used by the USN AC and USN RC. While this solution does not address all functionality associated with NMCI management, it does specifically address the issues concerned with account management. It is believed that the functionality built into these solutions could reap immediate benefits and substantially decrease the $35 million bleeding that the USN RC is currently experiencing.

Further, the research surveys revealed that many users are not aware of the resources available to assist with account management. One in particular is the use of Active Directory, and not the GAL, to verify existing accounts and compare them with NET and eMarketplace. The majority are unaware how to map their local computer to

Active Directory in order to view exactly which accounts are being billed by the contractor. Instead, the GAL's email account information is used, which is downloaded to a local resource (i.e., spreadsheet or database) to complete their monthly validation and reconciliation.

This seems to indicate that the users want to manage properly, but do not know how to manage because they have not been properly trained. This could easily be resolved if a web-based training curriculum were established to assist them in learning how to use the currently available tools. Education and training in this area is critical, and if not done, the account management process will continue to be 'a challenge' despite other future initiatives (i.e., the incorporation of additional modules for NET or other changes in the IT systems).

Lastly, the other recommendations made in the 'radical' process should be considered and researched. Parts of the solution already exist in the existing legacy systems, but what remains requires some modification to the overarching policy and systems to support integration. By analyzing and mapping the current processes and using a methodology such as KVA to measure the knowledge in each of the sub-processes, managers can identify those areas not providing much value to the overall process and recommend more effective solutions.

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APPENDIX A. CONTRACT LINE ITEM (CLIN) LIST

CLIN	Description	Last Posted
0001AA	Fixed Work Station, Red	13-Nov-03
0001AB	Fixed Work Station, White	13-Nov-03
0001AC	Fixed Work Station, Blue	13-Nov-03
0001AD	Fixed Work Station, Thin Client	4-Aug-03
0001AE	Remote User Credit (Moved to CLIN 004105)	19-Feb-03
0001AF	Fixed Workstation, Classified Thin Client	15-Dec-03
0002AA	Portable Seat	13-Nov-03
0002AB	Ultra-Lightweight Portable Seat	13-Nov-03
0003AA	Embarkable Work Station, Full Service	13-Nov-02
0003AB	Embarkable Work Station, Limited Service	28-Apr-04
0004AA	Embarkable Portable Seat, Full Service	15-Dec-03
0004AB	Embarkable Portable Seat, Limited Service	26-Mar-02
0004AC	Non-Ruggedized Deployable Portable	13-Nov-03
0005AA	Basic Hybrid Seat	30-Mar-04
0005AB	Enhanced Hybrid Seat	30-Mar-04
0005AC	Reserved	16-Jan-02
0005AD	Personal Access Package - 100% Concurrent Use	30-Mar-04
0005AE	Personal Access Package - 30% Concurrent Use	30-Mar-04
0006	Additional Standard Wall Plug Service	21-May-03
0006AA	Additional Standard Wall Plug Service	21-May-03
0006AB	Unclassified Wall Plug - Service Only	21-May-03
0006AC	Classified Wall Plug - Service Only	21-May-03

CLIN	Description	Last Posted
0006AD	Unclassified Wall Plug	30-Mar-04
0006AE	Classified Wall Plug - Inside a Controlled Access Area	30-Mar-04
0006AF	Classified Wall Plug - Outside a Controlled Access Area	30-Mar-04
0006AG	Project Wall Plug	30-Mar-04
0006AH	Switch Port - Low Bandwidth Service	22-Sep-03
0006AJ	Switch Port - High Bandwidth Service	22-Sep-03
0006AK	Sub-Device IP Address Management Service	22-Sep-03
0006AL	Project Wall Plug Service (Group of 8)	13-Feb-04
0006AM	Project Wall Plug Service (Group of 12)	13-Feb-04
0006AN	Project Wall Plug Service (Group of 12)	13-Feb-04
0006AP	Project Wall Plug Service (Group of 12)	13-Feb-04
0007	High-End Upgrade Packages	N/A
0007	For CLIN 0001AA Fixed Workstation Red	13-Nov-03
0007	For CLIN 0002AA & 0002AB Portable	13-Nov-03
0007	For CLIN 0003AA Full Service Embarkable	13-Nov-02
0007	For CLIN 0004AA Full Service Embarkable Portable	12-Dec-01
0008AA	Mission-Critical Upgrade Package - Single Connection	22-Dec-04
0008AB	Mission-Critical Upgrade Package - Dual Connection	22-Dec-04
0009AA	Classified Connectivity Upgrade Package	22-Apr-03
0009AB	Switchable Classified Connectivity (Thin Client Solution)	22-Oct-03
0009AC	Switchable Classified Connectivity (Dual CPU Solution)	26-Mar-02
0009AD	Re-Bootable Classified Connectivity Upgrade Package	6-Mar-02
0009AE	Switchable Classified Connectivity Upgrade Package (Dual CPU Solution/White)	26-Mar-02
0009AF	Switchable Classified Connectivity Upgrade Package (Dual CPU Solution/Blue)	26-Mar-02

CLIN	Description	Last Posted
0009AG	Switchable Classified Connectivity Upgrade Package (Dual CPU Solution/Portable)	26-Mar-02
0009AH	Switchable Classified Connectivity Upgrade Package (Dual CPU Solution / Non-Ruggedized Deployable Portable)	24-Jul-02
0010AA	Basic Voice Seat	4-Dec-00
0010AB	Business Voice Upgrade Package	4-Dec-00
0010AC	Mission-Critical Voice Seat Upgrade Package	9-Apr-01
0010AD	Pier Voice Line	4-Dec-00
0010AE	Pier Voice Trunk	4-Dec-00
0010AF	Commercial Voice Seat	4-Dec-00
0010AG	Commercial Voice Connectivity	4-Dec-00
0011	Secure Voice Seat	4-Dec-00
0012	Mobile Phone Seat	4-Dec-00
0013	Personal Paging Service Seat	24-Jul-02
0014	Fixed Video Teleconference Seat	4-Nov-03
0015	Moveable Video Teleconference Seat	4-Dec-00
0015AA	Basic Moveable VTC Seat	22-May-02
0015AB	High-End Moveable VTC Seat	22-May-02
0015AC	Mission-Critical Moveable VTC Seat	4-Dec-00
0015AD	Premium Moveable VTC Seat	22-May-02
0016AA	Additional File Share Services - Unclassified (10Gb)	30-Mar-04
0016AB	Additional File Share Services - Classified (10Gb)	30-Mar-04
0016AC	Email Storage - Unclassified (25Mb)	30-Mar-04
0016AD	Additional Email Storage - Classified (25MB)	30-Mar-04
0017	Internet Access for Mobile Phone Seat	4-Dec-00

CLIN	Description	Last Posted
0018	Classified Remote Access Service	26-Mar-02
0019	Reserved	2-Jul-00
0020	Data Seat Voice Communications Upgrade	9-Apr-01
0021	Defense Messaging System Data Seat Upgrade	6-Mar-02
0022AA	Basic Desktop VTC	1-Aug-03
0022AB	High-End Desktop VTC	1-Aug-03
0023	Optional User Capabilities	25-Apr-05
0024	Additional Non-Classified Account	9-Apr-01
0025	Additional Classified Account	9-Apr-01
0026	Additional Moves, Adds, Changes	21-May-03
0026AA	Additional Moves, Adds, Changes	26-Jun-03
0026AB	Physical MAC Group of 50	26-Jun-03
0026AC	Physical MAC - Group of 250	26-Jun-03
0026AD	COI MAC	26-Jun-03
0026AE	Voice Moves, Adds, and Changes	22-Sep-03
0026AF	VTC Moves, Adds, and Changes	5-Jan-01
0026AG	Annual Administrative MAC	21-May-03
0026AH	Annual Physical MAC	21-May-03
0026AJ	Annual Physical MAC (Needing a Wall Plug)	21-May-03
0026AK	Annual Embarkable MAC	21-May-03
0026AL	Administrative MAC (Single)	26-Jun-03
0026AM	Physical MAC (Single)	26-Jun-03
0026AN	Embarkable MAC (Single)	26-Jun-03
0026AP	Project MAC (Single)	4-Nov-03

CLIN	Description	Last Posted
0026AQ	Project MAC Service	11-Mar-04
0027AA	Standard Low Bandwidth Application	21-May-03
0027AB	Standard Medium Bandwidth Application	21-May-03
0027AC	Standard High Bandwidth Application	21-May-03
0027AD	Mission-Critical Low Bandwidth Application	4-Dec-00
0027AE	Mission-Critical Medium Bandwidth Application	6-Feb-01
0027AF	Mission-Critical High Bandwidth Application	4-Dec-00
0027AG	Legacy Application Server Connection	26-Jun-03
0028	Data Warehousing	4-Nov-03
0029	Legacy Systems Support	4-Nov-03
0030	Network Operations Display	16-Jan-02
0031	Military Personnel Core Competency Development (Sea-Shore Rotation and Operating Forces/Supporting Establishment Rotations)	25-Jan-02
0032	External Network Interface	4-Nov-03
0033	Information Technology/Knowledge Management Retraining Program	6-Feb-01
0034	Satellite Terminal Support	4-Nov-03
0036	OCONUS Service	8-Apr-05
0038AA	Developer Fixed Workstation Upgrade	22-Dec-04
0038AB	Developer Portable Workstation Upgrade	26-Mar-02
0038AC	S&T Terminal Services	22-Sep-03
0038AD	S&T Fast Ethernet Wall Plug	16-Jan-02
0038AE	S&T Wall Plug Service - Modified Gigabit Ethernet Network Transport-Lots of 4	16-Jan-02
0038AF	S&T Wall Plug Service - Modified Gigabit Ethernet Network Transport-Lots of 8	16-Jan-02
0038AG	S&T Wall Plug Service - Modified Gigabit Ethernet Network Transport-Lots of 16	16-Jan-02

CLIN	Description	Last Posted
0038AH	S&T Network Transport - Other	4-Nov-03
4101	Desktop Support	19-Feb-03
4102	Desktop Refresh	19-Feb-03
4103	Desktop Refresh With NMCI Gold Disk Software	19-Feb-03
4104	Assumption of Responsibility	19-Feb-03
4105	Remote User Credit	19-Feb-03
4106	Remote User Credit (Japan)	6-Jun-03
0043	Asbestos Material Abatement	1-Aug-03
0044	Department of Defense Mentor-Protégé Program (0044AA - 0044AF)	23-Dec-03
0046	File Removal Service	19-Jan-05
0047	Software Certification (0047AA - 0047AD)	24-Nov-04
0048	Software Distribution (0048AA - 0048AB)	22-Dec-04
0049	Hardware Certification and Installation (0049AA - 0049AD)	22-Dec-04
0051	Waterfront Support (0051AA - 0051AB)	27-May-05
0053	Premier Support (0053AA - 0053AB)	27-May-05

APPENDIX B. NMCI ACCOUNT MANAGEMENT SURVEY QUESTIONS

Navy Marine Corps Intranet (NMCI)
Account Management Survey Questions for all Navy Reserve Activities (NRA)

For the purpose of this survey, Reservists include all Drilling Reservists (DRILLRES), Full Time Support (FTS) personnel are explicitly separated from the Reservists category.

<u>Administrative</u>

1. Name of your Navy Reserve Activity (NRA): (data entry field, 30 char) **(REQ)**

2. NRA UIC: (data entry field, 10 char) **(REQ)**

3. Your Echelon IV command: **(REQ)**

    (Pull down menu):

    i. REDCOM Northeast

    ii. REDCOM Mid Atlantic

    iii. REDCOM Southeast

    iv. REDCOM South

    v. REDCOM Southwest

    vi. REDCOM Northwest

    vii. REDCOM Midwest

    viii. NAR Atlanta

    ix. NAR Brunswick

    x. NAR FT Worth

    xi. NAR Jacksonville

    xii. NAR New Orleans

    xiii. NAR Norfolk

    xiv. NAR Point Mugu

    xv. NAR San Diego

    xvi. NAR Whidbey Island

    xvii. NAR Willow Grove

    xviii. Other

    a. If other, what is the name of your echelon IV command? (Text Box)

4. Date NRA cutover to NMCI: (month, year drop down menu) **(REQ)**

5. Number of Reservists assigned to your NRA: (Data Entry Field: 5 char) **(REQ)**

6. Number of Full Time Support personnel assigned to your NRA: (Data Entry Field: 5 char) **(REQ)**

7. Do the majority of the DRILLRES drill on or offsite?
   (2 radio blocks: "on-site" or "off-site") **(REQ)**

8. Is NMCI management a primary duty or collateral duty? (2 radio blocks: "primary duty" or "collateral duty") **(REQ)**

   a. If a collateral duty, does it warrant a full-time position? (3 radio blocks: "yes" or "no" or "not a collateral duty") **(REQ)**

   b. If a primary duty, does it occupy sufficient time to be warranted? (3 radio blocks: "yes" or "no" or "not a primary duty") **(REQ)**

9. Does your command have a standardized check-in and check-out procedure (i.e. check-in check-out sheet)? (2 radio blocks: "yes" or "no") **(REQ)**

   a. If yes, is the NMCI account management process linked with your DRILLRES/FTS check-in and check-out process? (2 radio blocks: "yes" or "no")

   b. How is the check-in and check-out procedure enforced? (text box)

NMCI Account Management

10. Do you have a standardized procedure for NMCI account management? (2 radio blocks: "yes" or "no") **(REQ)**

11. If you answered "yes" to #10, please explain in detail your step-by-step NMCI account management process for the following situations:

    a. Checking in a DRILLRES new to the Navy Reserve: (Data entry field, 250 char)

    b. DRILLRES/FTS transferring to your command from another command: (Data entry field, 250 char)

    c. A DRILLRES/FTS leaving your command and transferring to another command: (Data entry field, 250 char)

d. A DRILLRES/FTS terminating service in the Navy Reserve: (Data entry field, 250 char)

e. DRILLRES transferring to active duty: (Data entry field, 250 char)

12. What are the most difficult or time consuming parts of the process? (Data entry field, 250 char) **(REQ)**

13. What automation tools are utilized by the NMCI account manager? (checkboxes: "Excel" and "Access" and "Word" and "NET" and "NSIPS" and "Other" + data entry field to explain "other") **(REQ)**

14. Prior to submitting a MAC, do you verify that an NMCI account does not already exist for that individual? (2 radio blocks: "yes" or "no") **(REQ)**

a. If yes, what is your verification process? (Data entry field, 250 char)

15. What steps do you take if the individual already has an NMCI account? (Data entry field, 250 char) **(REQ)**

16. How do you ensure that every DRILLRES/FTS has only one NMCI account? (Data entry field, 250 char) **(REQ)**

17. Do you verify legitimate multiple account requirements? (2 radio blocks: "yes" or "no") **(REQ)**

a. If yes, please explain how you verify legitimate multiple account requirements (i.e. A contractor who also is a DRILLRES) (Data entry field, 250 char)

18. Do you submit your MAC/order request to the next higher echelon (higher level Customer Technical Representative (CTR)) for approval prior to placing the order or MAC? (radio blocks: "yes" or "no") **(REQ)**

19. Do you receive notification when an account is created or modified? (radio buttons, "yes" or "no") **(REQ)**

NMCI Account Management Processing Time

20. On average, how many times a week does each of these occur?

a. Checking in a DRILLRES new to the Navy Reserve: **(REQ)**

b. DRILLRES/FTS transferring to your command from another command: **(REQ)**

    c. DRILLRES/FTS leaving your command and transferring to another command: **(REQ)**

    d. A DRILLRES/FTS terminating their service in the Navy Reserve: **(REQ)**

    e. A DRILLRES transferring to active duty: **(REQ)**

(for each a, b, c, d, e, build nine radio blocks: "0-10" or "11-20" or "21-30" or "31-40" or "41-50" or "51-60" or "61-70" or "71-80" or "over 80 times")

21. On average, how long does each individual process take (from the time the request is made to the time the action is completed)?

    a. Checking in a DRILLRES new to the Navy Reserve: **(REQ)**

    b. DRILLRES/FTS transferring to your command from another command: **(REQ)**

    c. DRILLRES/FTS leaving your command and transferring to another command: **(REQ)**

    d. A DRILLRES/FTS terminating their service in the Navy Reserve: **(REQ)**

    e. A DRILLRES transferring to active duty: **(REQ)**

(for each a, b, c, d, e, build nine radio blocks: "half day" or "one day" or "one and a half days" or "two days" or "three days" or "four days" or "five days" or "within a week" or "over a week")

22. Do you have a method for managing accounts derived from seat purchases (i.e. Two accounts for each unclassified seat, five accounts for each classified seat)? (radio blocks: "yes" or "no") **(REQ)**

    a. If yes, please explain your management process: (data entry field, 250 char)

    b. How do you track the CLINS (by quantity and type) you have purchased? (data entry field, 250 char) **(REQ)**

23. On average, how many hours per week do you spend on account management? (radio buttons, "0-5 hours" or "6-10 hours" or "11-15 hours" or "16-20 hours" or "21-25 hours" or "26-30 hours" or "over 30 hours") **(REQ)**

24. On average, how many hours per month do you spend on account management? (radio buttons: 0-10 hours, 11-20 hours, 21-30 hours, so on) **(REQ)**

25. If you did not have any automation tools at your disposal (Excel, NMCI Enterprise Tool (NET), etc) and were forced to manage NMCI through logbooks, face-to-face communication, and other non-automated means, how much time do you predict it would take to properly manage NMCI accounts? **(REQ)**

    a. Predicted time per month (time in hours): (radio buttons "0-10, 11-20, 21-30, 31-40, 41-50, over 50 hours") **(REQ)**

Command Questions

26. What outputs (in the form of reports, confirmations, emails, messages, etc) are part of your account management process? Please provide input to the following table, following the example provided, and list all applicable outputs. **(REQ)**

Output Product	Format Used	Submitted To	Frequency
NMCI Update	*Access Report*	*CO, XO, OPS*	*Monthly*

27. Do you have access to the NMCI Enterprise Tool (NET)? (radio buttons, "yes" or "no") **(REQ)**

    a. If yes, do you use NET to manage your NMCI orders and account data? (radio buttons, "yes" or "no")

    b. If yes, what information are you entering into NET? (data entry field, 250 char)

28. How many hours do you estimate it would take to adequately train an individual (i.e. your relief) to perform account management? (radio buttons: "0-10 hours" or "11-20 hours" up to "over 80 hours") **(REQ)**

    a. Of the training time allowance indicated above, how much of that time would be required to train an individual to handle the following tasks:

        i. Checking in a DRILLRES new to the Navy Reserve: **(REQ)**

        ii. DRILLRES/FTS transferring to your command from another command. **(REQ)**

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        iii. DRILLRES/FTS leaving your command and transferring to another command: **(REQ)**

        iv. A DRILLRES/FTS terminating their service in the Navy Reserve: **(REQ)**

        v. A DRILLRES transferring to active duty: **(REQ)**

29. Do you have any recommendations, concerns or complaints about NMCI account management within your command? (data entry field, 250 char)

    a. Outside your command? (data entry field: 250 char)

APPENDIX C. INTEGRATED WEB-BASED ENTERPRISE TOOL PROTOTYPE

The web-enabled database prototype/solution that was created would replace several of the applications that currently do not interface with any of the enterprise-level systems. The To-Be prototype was designed as an interim solution to ease the account management challenges for the claimancy until the next module of NET has been completed. It demonstrates the type of functionality that should be incorporated in a more robust version of the SR eForm or in the next module of NET. This prototype is not fully functional and should not be deployed in its current state as there are numerous technical functions, security considerations, and quality attributes that must be added before it is equipped to handle the magnitude of data required for an enterprise level solution.

Several assumptions were made when designing the website, which are apparent in its demonstration, and appear as follows:

- The prototype has no direct interface with NET

- NET will continue to perform seat management as it does currently. This assumption was made because NET currently appears to perform seat management adequately and the issues surrounding seat management were not the focus of this project.

- The data cleansing is complete or near completion. The prototype does not perform tasks associated with cleaning up the database from its current state

- The prototype will be initially populated with data from Active Directory. After the data cleansing, all accounts will be loaded into this site before it becomes fully functional.

The benefits of the functionality embedded in the prototype are tremendous. Each of the pages was designed with the user in mind and includes many of the quality attributes desired based on the user surveys. Additionally, the website was designed to achieve efficiency in management at all levels, from the lower level ACTR to the highest level CTR. Some of the advantages are:

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- Addresses rapid MAC submissions with the use of auto-fill and dropdown menus to populate repetitive data and enhance the user interface. This eliminates the need for the user to type common data manually for every MAC submission.

- The site guides ACTRs/DCTRs through a standardized process for completing any request. It eliminates the ambiguity in completing a request, as the site will automatically present the next required step when the "submit" action button is selected.

- Reduce duplicate accounts (in error). The site queries user names, lists match, and display the user's account history.

- The site has many embedded training links making it a user-friendly environment where account managers can easily learn the difficult NMCI terminology, business rules, and Active Directory mapping.

- The website will automatically submit requests to the contractor's SRM Team to deliver and install hardware; to handle MAC requests; and generate trouble tickets.

- Transparent linking of profiles to seats. Ensures 100% utilization of free accounts by attaching them automatically to seats. This is performed without any additional action required by the user.

- The DCTR will be able to perform all the actions of an ACTR through access to their data repository.

- The DCTR view shows a hierarchy of subordinate commands.

- Security authentication and write access based on the login ID has been implemented.

- Some form validation exists in the site but does not incorporate it into every required page. Some fields accept for information that is unique in the business rules (i.e., asset ID, seat ID etc.)

- This prototype is also devoid of mandatory functionality to ensure integrity of the system and interface with enterprise-level systems (i.e., NET).

The recommended/required outstanding items that should be added to the system are:

- The site does not include bulk requests submissions although it is certainly recommended.

- It does not interact with any other database and is only as good as the data that currently exist in the database. An interface should be built that would provide an interface to NET and perhaps Active Directory.

A.   DATABASE SCHEMA

B.   PORTAL LOGIN PAGE

C. PORTAL PAGE ONE

SERVICE REQUEST eFORM

EDS | NMCI | NPS

| ACTR Tools | DCTR Tools | RESFOR AUDIT | Logout |

USER: WTBLACKL
UIC: 12456

You have returned Seat requests!

ACTR TOOLBOX

Account Management

Inprocess users	View Active Accounts
Request password reset	How to see which accounts are in your Active Directory
Search MAC history	What is a User Profile?

Seat & Asset Management

Order a new hardware seat	View/Edit Seat Data
Request upgrade to existing seat	View/Edit Hardware/ Peripherals
Request a physical seat move	Validate eMarketplace Invoice
Turn in excess seat	Administratively add seats

UNIT STATISTICS:

Choose a number below to view details

Status	Accounts	Seats
Billable	3	14
Non-billable	1	
MACs:		
Pending	6	8
Returned	0	1

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APPENDIX D. ENTERPRISE-LEVEL INFORMATION TECHNOLOGY SOLUTION FUNCTIONAL REQUIREMENTS DOCUMENT

CNRF Navy and

Owners and List of

Name	Er
LCDR Maurice Carr	Ma
Mary Whitfield	Ma
CAPT Mark Krause	m
CDR John Ripkey	jol
LCDR Dan Rowe	da
Mike Robb	mi

Signoffs

Phase	Name	Date	Signature
Functional Specifications	LCDR Carr, FPM	xx/xx/xx	
	CAPT Mark Krause		
	CDR John Ripkey		
	Mary Whitfield		
	LCDR Dan Rowe		
	Mike Rob		

Revision History

Date	Reason for change(s)	Author(s)
08March 2005	First Draft	Mary Whitfield
		LCDR M Childs
		LCDR Dan Rowe

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1. Summary

Commander Nav...
web-based tool that will a...
DCTR, CTR) with manag...
current NMCI managemer...
applications and manual p...
systems, data integration,...
management process tedic...
effectively and efficiently...
commands. This results i...
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The NMCI contr...
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2. Project Goals, Jus...

2.1 Project Goal...

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[1] A seat is defined as any por...
management contract.
[2] An account is defined as a...
entered into the network's A...

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Currently the NMCI management process includes approximately five enterprise-level IT systems and a myriad of applications used for local tracking and management. The primary enterprise-level systems are:

- NMCI Enterprise Tool (NET) with a primary function to manage seat data and for build-outs [3] of new commands.
- Electronic Marketplace (eMarketplace) for billing and invoicing.
- Service Request Electronic Form (SREform) for submission of hardware, software, and account Move-Add-Changes (MAC).
- MS Outlook Global Address List (GAL) to verify the existence of an account.
- MS Active Directory to verify account totals for billing purposes.

Each of the various systems currently used maintains data that is critical for NMCI management. However, no capability exists to automatically exchange data between them for system updating purposes, and no synchronization exist between them for data integrity. The lack of a fully integrated system requires the technical representatives to retrieve data, in some cases redundant data, from each to perform daily routine tasks.

Budget cuts have minimized funding dollars required to effectively train personnel on the current management systems, therefore, most training is performed through personnel turnover or throug

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[3] A buildout is an action per
involves inputting administr
and user accounts prior to de

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a decrease in service levels in other areas of responsibility. Many of the Echelon[4] V technical representatives perform the NMCI management responsibility as a collateral (or secondary) job assignment. The current process has become extremely labor-intensive and, in some instances, requires other command personnel to perform functional tasks that would have otherwise been performed by the technical representative as a primary job assignment. This shift in responsibility has placed an unnecessary burden on many commands that are already short-staffed. A solution is required to improve this process and provide the necessary feedback and reports for verification and accuracy of data submitted by the contractor.

The current process, tools, and business rules have caused the USNR to accumulate an enormous amount of chargeable accounts, resulting in approximately $30 million in additional costs for user accounts. The elimination of excess accounts from the Active Directory has been a daunting task partially because technical representatives and users are having difficulty determining which accounts are excess and which are a justifiable need. Excess accounts can be categorized as duplicate accounts existing in the Active Directory that are not required. These accounts result in unnecessary and substantial charges to the USNR. The solution should assist in substantially minimizing the costs accrued for additional accounts by minir

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2.3 Success Crite

NMCI ACTR O

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[4] An Echelon is a Civil War
document, it is defined as th
command in the reporting ch
reporting chain of command

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NMCI ACTR Seat and Asset Management Tool: This tool shall be available to all ACTRs
to perform the following tasks:

- Place an order for a new seat (i.e. portable or desktop computer, peripheral that is not
  assigned to a computer) or new hardware (peripheral devices such as a printer, scanner or
  PDA, etc.). The tool shall allow entry of all the contractor required data fields and the
  request should automatically be submitted to the authorized submitter (DCTR) for
  approval prior to forwarding to the contractor for final action.
- View and edit seat data once a seat has been entered into the tool and installed. This
  allows the authorized initiator (ACTR) to quickly recall and administratively make
  modifications to information that may have been entered about a specific seat. Any
  administrative modification to seat or account data does not require the approval of the
  DCTR or action by the contractor, but is simply updating the current information that is
  within the database.
- View and Edit hardware and peripherals that have been entered into the tool and installed.
  This shall also allow the ACTR to administratively make modifications to information
  that may have been entered about a specific piece of hardware or peripheral
- Request an upgrade to an existing seat will allow the ACTR to submit a request for
  modification to a seat's current configuration. This change may require additional costs
  therefore the tool should be sophisticated enough to forward any change/upgrade requests
  to the authorized submitter or DCTR prior to submission to the contractor.
- Request a seat to be relocated to another location. This shall enable an ACTR to use
  automation to recall all the seats and specify which seats will need to be moved and to
  provide their desired location. This is a billable action therefore the request for
  equipment relocation should be automatically submitted to the DCTR for approval prior
  to submission to the contractor.
- A view of all invoiced items with the seat identification number, any additional hardware
  that is attached to the seat, itemized costs for each, and the accumulated dollar total for
  monthly invoice validation.
- The ability to use automation to submit a request to return any seat to the contractor that is
  no longer required. The ACTR should have to perform minimal data entry for this action
  to occur by including a consolidated list of all seats, the ability to select the seat to return,
  pre-populated text entry fields that include the seat information, and an option to submit
  selected seat for return.
- The ability to administratively add any seat and the associated hardware peripherals that
  already exist at the command but is not already listed in the tool. This is an important
  feature for the organizations that have already cutover to NMCI and their initial order
  was not entered in the tool. The action shall be performed by the ACTR and no
  forwarding requirement to the DCTR or contractor exists.

NMCI Account Management Tool: This tool shall be available to all ACTRs to perform
the following tasks:

- The capability to in-process a new user or out-process and existing user. In-processing
  shall include the ability to automatically check the system to see if a user's name exists in
  the system. If one exists, the system shall return all instances of that name, and the

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account history, for verification of possible accounts that may have been previously assigned to the user that is in-processing. The account information of users that are out-processing shall be transferred from the losing ACTR to the gaining command's ACTR's inbox of the tool for acceptance.
- Newly-created accounts shall be automatically assigned by the system to a seat without any additional intervention required by the ACTR. Once the account totals have exceeded the total accounts that accompany the seats, the tool shall automatically assign these accounts to a chargeable MAC (called a CLIN 0024).
- The ability to view all accounts that are associated with the ACTR's command. This information shall mirror the information that exists in the NMCI Active Directory. Separation between the accounts that are billable and the non-billable accounts shall be made by listing each category separately and providing ght e totals for each.
- To automatically submit a request for a password to be reset.

NMCI DCTR Seat and Asset Management Tool: This tool shall be available to all DCTRs to perform the following tasks:

- As the authorized submitter, the DCTR is required to approve any MAC requests before they are forwarded to the contractor's Service Request Management (SRM) team. The DCTR's web-based view shall include a webpage that contains an inbox of requests. The inbox shall include all requests forwarded from the lower-level ACTR's from the Naval Reserve Activities (NRA) that are pending review and approval.
- The DCTR tool shall forward any requests that are approved to the contractor SRM team supervisor web tool for distribution between the contractor teams.
- The DCTR tool shall generate and submit requests in the absence of an ACTR.

NMCI RESFOR Management Tool: This tool shall be available to all primary CTRs to perform the following tasks:

- Review all account and seat accumulated totals submitted by all technical representatives within the RESFOR claimancy. The tool shall include summary data for the total for each account status (billable, non-billable, used "free" accounts, unused "free" accounts, CLIN 0024's required), total seats installed, and total seats pending installation. Total dollar amounts shall be automatically calculated for quick reference against the eMarketplace totals. CLIN 0024's totals should be calculated in summary of all accumulated for quick reference.

NMCI Contractor Management Tool: This tool shall be available to the supervisors of the SRM team to perform the following tasks:

Supervisor:
- The Supervisor has overall management responsibility for all MACs submitted by the authorized submitter. Subsequently, the supervisor shall have sole authority to view accepted MACs and assign an SRM team that will be responsible for servicing the MAC requests.

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- Delineation be
  team assignm
  number, MA(
- Once a MAC is
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- The supervisor

Team:

- Each team has
- A view of the N
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3.1.1 Usability

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3.1.1.a

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3.1.1.b

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3.1.2 Embedded

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3.1.2.b

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Number, Comput
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3.1.3 ACTR Too

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3.1.3.a

This view
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3.1.3.b

128

The view

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3.1.3.c

Training

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3.1.3.d

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management func

- In-proc
- Reques
- Search
- View A

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- Order a
- Reques
- Reques
- Turn in
- View/E
- View/E
- Validat
- Admin

3.1.3.1 In-proces

ACTRs a

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Active Directory.

3.1.3.1.a

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[6] In-processing a user entails

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identification or c
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An ACTR will on
the data repository

3.1.3.1.b

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3.1.3.1.c

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3.1.3.2 Request

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3.1.3.3 Search M[...]

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3.1.3.4 Order a [...]

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supervisor using t[...]

3.1.3.4.a

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address, installati[...]
fields. This will r[...]
which could caus[...]
list that includes [...]
CLIN etc.) for ea[...]
location shall incl[...]

3.1.3.4.b

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and the request is[...]
of all seats (curre[...]

3.1.3.4.c

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option/sub-option

3.1.3.5 Request a

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3.1.3.5.a

A pre-pop

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3.1.3.5.b

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3.1.3.6 Request a

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ACTR is required

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3.1.3.6.a

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3.1.3.7 Turn in a

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option/sub-option

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the ACTR confir

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3.1.3.8 View/Edi

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3.1.3.8.a

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3.1.3.10 Validate

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3.1.3.11 Adminis

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3.1.3.11.b

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3.1.3.11.c

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and ink jet printer
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3.1.3.11.f

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3.1.4 DCTR Tool

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3.1.4.a

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This view should
MACs. The UIC

shall be included
MACs should be

3.1.4.b

The DCT
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either forwarded
The DCTR will b

3.1.4.c

The acco
middle initial, log
order number, net
command address
option CLIN, clas
point of contact in
requests before th

3.1.5 Contractor

The conta
technical represen
submitter (DCTR
directly from the

3.1.5.a

The contr
SRM teams. The
with the user logi

3.1.5.1 Contracto

The Supe
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3.1.5.1.a

A page is
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MAC (user or sea
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information.

3.1.5.1.b

Clicking
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option/sub-option
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and site code), an
comment block fo

3.1.5.1.c

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user-friendly pre-
option to select T

3.1.5.1.d

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accepted), the cor

3.1.5.2 Contracto

The SRM

supervisor assigns

working the tasks

3.1.5.2.a

A team vi

The summary inf

order, new user),

location of the M

details.

3.1.5.2.b

Clicking

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option/sub-option

installation point

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and site code), an

3.1.5.2.c

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3.1.6 RESFOR

A view is[...]
for all RESFOR l[...]
purpose of auditi[...]
view will also all[...]

3.1.6.a

The acco[...]
reference by the u[...]
categories:

Account [...]
- Total[...]
- Total[...]
- Total[...]
- Free [...]
- CLIN[...]

Seat Aud[...]
- Total S[...]
- Total S[...]

4. Security Requiren[...]

System E[...]
Management Too[...]
controls germane[...]
of the NMCI netw[...]

System I[...]
or share informati[...]
- NMC[...]
- Elect[...]
- Servi[...]
- MS [...]

- MS A

Ultimately, the ap

into one tool.

Written a

cognizant authorit

data/information.

General Descript

Evaluation	
Medium	
High	
High	
	available on a timely basis to meet mission requirements and avoid substantial losses.

Application Users: Primary users of the system and their associated hierarchy are listed in the graph below. Users will be granted access rights to the system commensurate with their assigned billet (ie. ACTR, DCTR, RESFOR). A user assigned a RESFOR account is an Echelon III user and will therefore have privileges to view all data within the system. A user assigned a DCTR account is an Echelon IV user. Echelon IV users are assigned authority over a specific region (i.e. Northeast, Southwest) and will have authority to view all data within their region. ACTR accounts are typically assigned at the Echelon V level. These accounts are command accounts and they have authority over users within their command. A detailed summary of user functionality is included in section 2.3 of this document.

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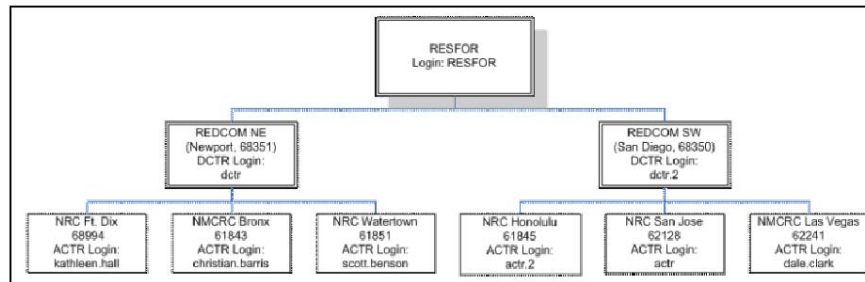
User Authentication: All users will be uniquely identified by use of a registered user id and secret password. Group or shared ids will not be used.   Passwords will meet the following usage, construction and change requirements:

- The password will not be the same as the user id

- Passwords will never be displayed on the screen

- Passwords will be a minimum of eight (8) characters and consist of mixed alphabetic and numeric character
  alphabetic charact

5. Data Conversion

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systems enumerated in th
importing data through an
robust interface capability
be established to govern t
separate from the newly d

6. Performance and

There are current
(NRFC) with an establish
potentially have more tha
server platform and netwo

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implemented throughout
selected DBMS should be
Shuffle application should
should be optimized with
loaded rapidly.

7. Platform Depende

Users can access
or Netscape Navigator wit
required to use the Client
The client software will r

8. Localization Requ

Not Applicable.

9. Parallel Testing R

The Management Tool is
addressed once a decision
systems. Once legacy syst
parallel.

10. Cross System Int

Initial database should be
data from net. A grace pe
to establish an accurate ba
should be ceased. Further
function of existing data (

Another primary interface
supervisor pages should g
database. This interface r

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email sent to the helpdesk

necessary fields to remedy

table could be initially po

and seats.

11. Data Archival, B

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media on a weekly basis.

media will be stored off-s

As the system har

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capacity over the first yea

12. Reporting Requi

User may require

required by commands fo

ability to extract that data

13. Project Flexibilit

EXAMPLE:
For a project to succeed, the
Schedule and Functional F
flexible to achieve success.
project) and their schedule h
they must be flexible to drop
resources. Working together
variables. The columns are c

- **Inflexible.** Mark 2 items
  Resources (Cost) and Sl

- **Flexible.** Mark one item
  included in the project,

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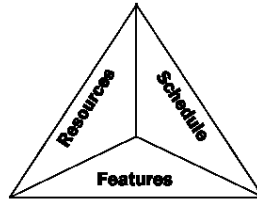
Project Trade-off Matrix

Functional Features	Resources (Cost)	Schedule	Inflexible	Flexible
ACTR Features				
3.1.1				
3.2.2				
3.1.3				
3.1.4				
3.1.5				
3.1.6				
3.1.7				
3.1.8				
3.1.9				
3.1.10				

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Project Trade-off Matrix

DCTR Functional Features	Resources (Cost)	Schedule	Inflexible	Flexible
3.2.1				
3.2.2				
3.2.3				
3.2.4				
3.2.5				
3.2.6				
3.2.7				
3.2.2				

Project Trade-off Matrix

Contractor Functional Features	Resources (Cost)	Schedule	Inflexible	Flexible
3.3.1				

A team should use the projec
to show absolute priorities; i
for the project team is that th
that no row or column in the
poses serious risk to the proj

In order for a team to be suc
the team owns one side of th
manage change and risk, and

14. Stack Ranking o

To ensure that items are wor
stack rank being most impor
development team to focus

Ranking	Req #
1	3.1.1
…	3.1.1.a

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...	3.1.1.b	
	3.1.3	ACTR Tool
	3.1.3.a	
	3.1.3.b	
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	3.1.3.2	
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	3.1.3.7	
. . .	3.1.3.7.a	

15. Roles and Respor

Chart below displays high-le
several skill sets of represent

Life Cycle	Role	
Planning	Setup hard	
	Developm	
	Functiona	
	Detailed I	
	Test Desig	
	Developm	
	Test Proje	
	Overall Pr	
Development	Data Man;	
	Unit Testi	
	System Te	
	User Test	
	User Test	
	Setup hard	
System Testing	Migration	
	Developm	
	Populate t	
	System Te	
	Bug Track	
	Drops for	
User Acceptance Test (UAT)	Migration	
	UAT	
	Populate t	
	UAT Test	
	Bug Track	
	Drops for	
	back throu	
Implementation	Migration	
	Production	
Execution	Operating	
Closing	Lesson Le	

APPENDIX E. WEB-BASED PROTOTYPE DESIGN DOCUMENT OF FUNCTIONAL REQUIREMENTS

Detailed Design

Owners and List

Name
Gwen Graves
Gwen Graves
Gwen Graves
Justin Rumps
Ian Denny
Dieter Jahn
Trey Blacklock
Chris Marvin
Chris Marvin

Signoffs

Phase	Name		
Detail Design	John Doe,		
	Joe Tester, Lead		
	Jane Prod Support, Production Support Mgr		
	Joe User Mgr, UM		
	Joe Functional Sponsor		

_____
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Revision History

Date	Reason for change(s)	Author(s)
3/24/2005	Baseline Functional Requirements met	

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Detailed Design

1. Summary

This application is a web-
browser, application serve

2. Hardware Requi

Server should have suffici
is about 405 Mb. Conside
being served on a Dell Po
a RAID 5 array for applica
Additionally, best practice
separate platforms in the
capabilities to support 256

3. Software Requir

System developed using
graphics. Database curre
issues, it should be migra
database, significant chan
5.0 using ASP on a Serve
VM and cookies enabled.

4. Presentation La

This section describes all
requirements. Included a
shots. The client should u
the functionality will stay t
a nicer user interface and

4.1 Screens

4.1.1.1 In-Process new users "Search Accounts for Profile"

Description	This form allows the ACTR to enter the name data of a prospective new user as it appears on a government-issued ID card. The purpose of this is to check for an existing account to prevent the creation of a redundant account
Security Group	ACTR, DCTR
Data	Last name, First name, and Middle initial are entered in the corresponding form boxes as they appear on the prospective users ID Card.
Actions	The "Clear" button allows form to be wiped clean in case of an error. The "Submit" button processes the data in a search function to check for existing accounts that match the input name. All accounts or specific types of accounts may be searched by using the "Accounts To Search" drop down menu.

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4.1.1.2 In-Process new users "Search Results"

Description	The search results screen displays accounts that match the name entered in the "Search Profiles" page. The results may or may not be a correct match for the prospective new users due to some users having names in common. To determine if the prospective new user is a match to one of the accounts the "History" link will display the MAC history for the account in question allowing a user to determine if the account matches previous duty stations and time frames.
Security Group	ACTR, DCTR
Data	Data on this page is derived from a query on the input user name from the "Search Profiles" page.
Actions	Profiles that appear on this page can be checked for a match to the prospective new user, link to update new information if a match is established, or link to create a new user profile if required.

4.1.1.3 Update User Profile

Description	Used to update user profile information
Security Group	ACTR, DCTR
Data	The data displayed initially on this screen is the information currently in the user profile table for the user in question. Data for the "UIC" drop down menu is provided from the "Activities" table. Data for the "Type" drop down list iis is is hard coded in the webpage.
Actions	Any data on the page can be modified and Submitted update the user profile table. A "Clear Form" button has been provided and can be used to clear all data on the screen before updating.

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4.1.1.4 User MAC History
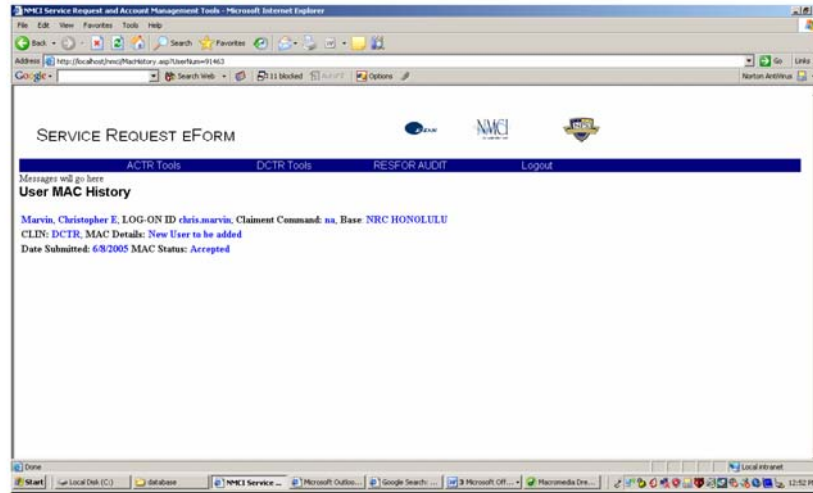
Description	This page displays MAC history from the MAC Table to assist in te determination of an account's ownership.
Security Group	ACTR, DCTR
Data	Data on this page comes from stored data in the MAC table.
Actions	None. Data is only viewable.

4.1.1.5 Add New User Profile

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Description	This screen is used for the input of new user data.
Security Group	ACTR, DCTR
Data	UIC field data comes from the Activities table and is default set to the UIC of the ACTR entering the data for the new users however, it may be changed to any UIC in the database.
Actions	Form fields are completed as required and are submitted to enter data into a new user profile and proceed to the creation of a "New User" MAC request.

4.1.1.6 New User MAC

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Description	New users MAC request to be submitted through the chain of approval for activation.
Security Group	ACTR, DCTR
Data	New User data comes from the user profile table. All default command data comes from the activities table.
Actions	Complete all fields as required and submit for approval.

4.1.1.7 Accounts within a specific ACTR's UIC
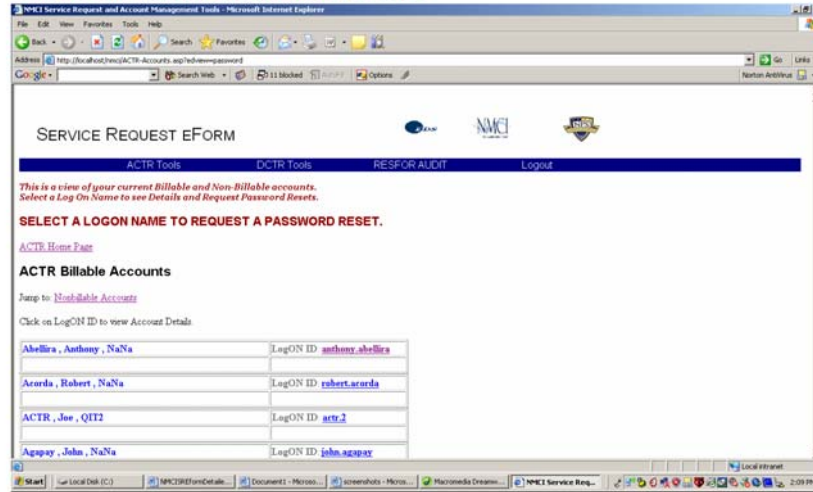
Description	This page provides dual functionality by both listing the accounts for a UIC and providing a link to the account details and an option to reset the password.
Security Group	ACTR, DCTR
Data	All data is from the user profile table.
Actions	Select a user logon ID for more information.

4.1.1.8 Account Details

Description	Details on an individual account.
Security Group	ACTR, DCTR
Data	Data is from the user profile table
Actions	User profile table data can be viewed and there is an option to reset the user's password with the "Password Reset" button.

4.1.2.1 Logon

Description	Enables the user to logon.
Security Group	All
Data	logOnName, password
Actions	Redirects user to home page based on eFormUserGroup.

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4.1.2.2 CookieWriter.asp

Description	Writes cookies based on the login. Cookies for UIC, LogOnName, DisplayName and TFMod# are written to the users computer
Security Group	User, ACTR, DCTR, RESFOR
Data	Data is pulled from TblUserProfile based on LogOnName
Actions	Automatically loaded and redirects to home page based on usergroup

4.1.2.3 ACTR Home

Description	List links to all of the functions that an ACTR needs to use. Has a unit statistics table to display totals for accounts, seats, billable, non-billable and all of the pending MACs
Security Group	ACTR,DCTR
Data	All count functions pertain to the UIC from the cookie. Billable Accounts or seat are not pending, deleted or disabled. MACs counted in pending or returned status
Actions	Count functions, read cookies, Display actions performed when arrived to from a previous page.

4.1.2.4 Order a hardware seat

Description	To be able to put in the CLINs, options, locations and POC for installation of new CLIN
Security Group	ACTR, DCTR
Data	All pre-filled fields are initially set to the default data found in the UserProfile table joined with the Activities table for the ACTR/DCTR who has logged in. Drop down menus come from the three CLIN_ tables and the Command Table.
Actions	Submit button posts the form to the Order Review page

4.1.2.5 Order Review

Description	This page allows the user to preview their selections before they submit a request.
Security Group	ACTR, DCTR
Data	All fields come from submitted form on seat_order page. Hidden fields include the date submitted.
Actions	Submit button inserts the row into the Seat table and extracts the autonumber for the seat row. This number becomes a session variable identifying the seatNumber. The page also creates session variable for POC name, phone and email because they may be different from the ACTR. The page redirects to the SeatProcessor page.

4.1.2.6 SeatProcessor.asp

Screen displays only: Processing your request. Please Standby.

Description	Adds a row to the MAC table to begin the request for a new seat.
Security Group	ACTR, DCTR
Data	SeatNum is derived from session variable. POC information comes from the session variables. All other data is read from the Seat table and written to the MAC table. The MAC table can store multiple actions on the same seat which may be at different locations.
Actions	Seat Order data is written to the MAC table

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4.1.2.7 Seat_Review

Description	This page shows all of the current seats under the responsibility of the ACTR/DCTR. It contains what the seats are and calculates billing information based on the CLINs. It will optionally display the results of the last action such as adding, editing, or ordering a seat. The bottom of the page displays pending seats.
Security Group	ACTR, DCTR
Data	Seat data comes from the TblSeat joined with the CLIN tables. The previous action is based on the seatNumber session variable.
Actions	A custom script adds the columns to a variable as they are displayed in the repeat region. This enables a grand total for the command per month.

4.1.2.8 Seat Selection

SERVICE REQUEST EFORM

| ACTR Tools | DCTR Tools | RESFOR AUDIT | Logout |

Select a Seat for UIC- 61851

This page shows a list of the installed Seats in your command. Select a seat to send a hardware workorder to EDS.

To administratively edit a seat without submitting a work order, click here.

Select a Seat ID to request a sub-option upgrade for that seat.

Current Seats. Select a link to sort the columns.

NMCI Seat ID	Base	Building	Room	CLIN	Option CLIN	SubOption CLIN	Start Date	End Date
10191189	NR MOBASCONTGRP 0218		3	0001AA	0006AG	0014	6/29/2003	6/29/2008
13702409	NR NMCB 27 DET 1727		9	0005AD	0006AG	0027	8/12/2002	8/12/2007
15586441	NR NMCB 27 DET 1727		8	0005AC	0009AD	0029	1/24/2002	1/24/2007
1585526	NR COMNAVREG MIDLANT DET A		3	0038AB	0010AA	0015	9/28/2004	9/28/2009
16122700	NR NMCB 133 DET C		10	0003AA	0010AE	0027	7/26/2000	7/26/2005
16158782			8	0001AE	0006AG	0013	8/18/2000	8/18/2005
16495660			3	0005AD	0009AD	0029	12/26/2003	12/26/2008
19067227	NR VTU 0218		9	0005AA	0010AB	0018	4/14/2000	4/14/2005
20464749	NR VTU 0218		5	0003AB	0006AB	0020	12/4/2003	12/4/2008
22392566	NR VTU 0218		2	0038AC	0010AC	0018	3/23/2001	3/23/2006
2376467	NR MOBASCONTGRP 0218		4	0005AE	0010AB	0019	8/1/2004	8/1/2009
25886104			10	0001AF	0010AA	0030	12/21/2001	12/21/2006
26136059	NR COMNAVREG MIDLANT DET A		4	0001AB	0008AB	0024	4/17/2002	4/17/2007
26628615	NR NMCB 27 DET 1727		3	0038AC	0009AF	0026	10/6/2000	10/6/2005
27583015	NR NAVHOSP PORTSMOUTH DET N		7	0004AB	0008AB	0024	2/28/2002	2/28/2007
28207528	NR MOBASCONTGRP 0218		2	0001AC	0006AC	0011	2/7/2002	2/7/2007
28797496			4	0001AF	0009AH	0024	12/4/2002	12/4/2007
29285333	NR COMNAVREG MIDLANT DET A		9	0003AA	0009AE	0020	3/5/2004	3/5/2009
29711872	NR NMCB 27 DET 1727		3	0004AB	0009AB	0016	10/8/2002	10/8/2007
30033108	NR VTU 0218		5	0005AC	0006AF	0017	9/18/2004	9/18/2009
31618279	NR NMCB 27 DET 1727		10	0001AA	0010AE	0019	5/3/2000	5/3/2005
33211814	NR VTU 0218		5	0004AA	0008AA	0023	1/25/2002	1/25/2007
34552393	NR NAVHOSP PORTSMOUTH DET N		2	0038AB	0006AB	0029	3/4/2001	3/4/2006
35192721	NR COMNAVREG MIDLANT DET A		3	0038AC	0007	0014	8/13/2000	8/13/2005

Description	Allows the user to select a seat to upgrade, add hardware to, delete or move. Seats in any status other than installed cannot be selected. i.e. if a seat is not installed, you shouldn't be able to request that it be moved or deleted.
Security Group	ACTR, DCTR
Data	Data come from the Seat Table.
Actions	Columns can be sorted to easily find a Seat. The page displays a different header base on which function you are selecting a seat to perform. The seat ID creates a querystring SeatNumber which is retrieved by the subsequent page.

4.1.2.9 Seat Upgrade

Description	Requesting an upgrade or change to an existing seat.
Security Group	ACTR, DCTR
Data	Fields come from the Seat Table. POC comes from a join between the MAC table and the user profile table.
Actions	Submit button writes a new record in the MAC table with a MAC Status of pending. Redirect to the ACTR Home page with a querystring to show that a seat has been changed.

4.1.2.10 Request Seat Move

Description	Request data nec. To physically move a seat from one place to another.
Security Group	ACTR, DCTR
Data	Initial data in the Fields comes from the TblSeat row selected from the seat select page and passed as a querystring. Also by the default data join of the Activities and UserProfile table based on the user LogOnName.
Actions	MAC is written to the MAC table with date submitted, pending status and "Request Seat Move" in details.

4.1.2.11 Seat Turn-in

Description	Allows the user to turn in a seat.
Security Group	ACTR, DCTR
Data	All field come from the seat table. POC data defaults to a join between Activities and UserProfile on LogOnName and UIC.
Actions	Submit button writes a row to the MAC table with hidden fields specifying turn-in in MAC Details, and date submitted.

4.1.2.12 Seat Details for pending seat

Description	This allows user to view, but not edit, any attributes of a seat in Pending status. It is used to verify requested edits, new orders, requests for moves or turn-ins.
Security Group	ACTR, DCTR
Data	All fields come from the Seat table with the exception of Status and status date which comes from the MAC table as the latest status on the SeatNum_FK provided by the session variable.
Actions	Return to Seat Prview links back to the seat_preview page.

4.1.2.13 Seat Edit Details

Description	This page allows the user to choose data sets to edit which are associated with a seat. Also presents a link to modify the computer hardware or Peripheral hardware associated with a seat. This allows the user to see all information about a particular seat.
Security Group	ACTR, DCTR
Data	Information for fields comes from TblSeat and TblHardware for the SeatNumber specified in the QueryString.
Actions	Select to edit the seat, location, computer, or Add/edit/delete a peripheral.

4.1.2.14 Administrative Seat Edit

Description	This screen allows a user to edit the seat CLIN and seat ID administratively. The changes on this page will not generate a request to NMCI. This feature would be disabled when the initial database is completely populated with correct data.
Security Group	ACTR, DCTR
Data	All fields are from the TblSeat
Actions	User can edit all fields and save changes to the TblSeat.

4.1.2.15 Seat Location Edit

Description	This screen allows a user to edit the seat location administratively. The changes on this page will not generate a request to NMCI. This feature would be disabled when the initial database is completely populated with correct data.
Security Group	ACTR, DCTR
Data	All fields are from the TblSeat
Actions	User can edit all fields and save changes to the TblSeat.

4.1.2.16 Edit Computer

Description	This screen allows a user to edit the computer information (service tag numbers, serial numbers etc.) for a valid seat. The changes on this page will not generate a request to NMCI. This feature would be disabled when the initial database is completely populated with correct data.
Security Group	ACTR, DCTR
Data	Fields come from TblHardware base on the queryString of seat selected from the previous page.
Actions	ACTR can change any field and submit the changes. Page returns to seat review with the seat number as a queryString.

4.1.2.17 Add Peripheral

Description	Allows the user to associate a peripheral with a seat. Only used for asset tracking, does not submit any requests to EDS
Security Group	ACTR, DCTR
Data	Fields come from the TblSeat and TblHardware. SeatNumber is selected by the session valuable "SeatNumber". Shows currently assigned peripherals. Drop down menu contains common hardware items to track
Actions	Add the peripheral, clear the form, and End the add peripherals page.

4.1.2.18 Edit Peripheral

Description	Change serial numbers etc for a particular piece of hardware. (Not a computer)
Security Group	ACTR, DCTR
Data	All filed are from the TblHardware
Actions	User can change all fields and submit or cancel.

4.1.2.19 Peripheral Deletion

Description	Confirms the request to delete a peripheral from association with a Seat. Does not send any request to NMCI.
Security Group	ACTR, DCTR
Data	TblHardware provides all of the fields
Actions	Delete or cancel deletion. Delete deletes the row in TblHardware

4.1.2.19 Administratively Add Seats (for initial population or RESFOR use only)

Description	Allows the ACTR to add a seat CLINs to TblSeat. This does not submit a request to NMCI.
Security Group	ACTR, DCTR
Data	CLINs and descriptions in the drop-down menus come from three CLIN_ tables.
Actions	Choose to add the seat or cancel. Adding a seat redirects to

4.1.2.20 Administratively Add Seat Location (for initial population or RESFOR use only)

Description	Assigns the seat just created to a unit and address.
Security Group	ACTR, DCTR
Data	Data describing the seat comes from a query to the TblSeat. Default data comes from the userProfile Joined with the Activities table. UICs are only UICs that the ACTR is responsible for.
Actions	Save location or clear.

4.1.2.21 Administratively add seat computer.

Description	Assigns a computer to the seat
Security Group	ACTR, DCTR
Data	Data describing the seat comes from a query to the TblSeat.
Actions	Input the computer properties.

4.1.3 Contractor Supervisor and Service Request Maintenance Team (SRM Team) View

4.1.3.1 Contractor Supervisor Home

Supervisor eAssign

You have 28 MACs to assign.
4 Seat MACs
24 Account MACs

Review Accepted MACs

Review MACs Assigned to Teams

MAC Number	MAC Submit Date	MAC Type	Classification	CLIN	Base/Command	View Details
1	5/20/2005	New Order	unclassified	0001AA	Base	Assign
11	5/22/2005	New User	unclassified	0026AF	NAVFAC	Assign
12	5/23/2005	New User	unclassified	0026AF	NAVFAC	Assign
13	5/24/2005	New User	unclassified	0026AF	NAVFAC	Assign
14	5/25/2005	New User	unclassified	0026AF	NAVFAC	Assign
15	5/26/2005	New User	unclassified	0026AF	NAVFAC	Assign
18	5/29/2005	New User	unclassified	0026AF	NAVFAC	Assign
19	5/30/2005	New User	unclassified	0026AF	NAVFAC	Assign
20	5/31/2005	New User	unclassified	0026AF	NAVFAC	Assign
21	6/1/2005	New User	unclassified	0026AF	NAVFAC	Assign
48	6/2/2005	New Order	classified	0002AB		Assign
22	6/3/2005	New User	unclassified	0026AF	NAVFAC	Assign
23	6/3/2005	New User	unclassified	0026AF	NAVFAC	Assign
24	6/4/2005	New User	unclassified	0026AF	NAVFAC	Assign
84	6/5/2005	Request CLIN Change	unclassified	0001AA		Assign
72	6/5/2005	New Order	unclassified	0001AC	Mello	Assign
25	6/5/2005	New User	unclassified	0026AF	NAVFAC	Assign
26	6/6/2005	New User	unclassified	0026AF	NAVFAC	Assign
30	6/10/2005	New User	unclassified	0026AF	NAVFAC	Assign
31	6/11/2005	New User	unclassified	0026AF	NAVFAC	Assign
32	6/12/2005	New User	unclassified	0026AF	NAVFAC	Assign

Description	Allows the Supervisor to view a list of all pending MAC requests. By selecting the View Details hyperlink for a specific MAC, the supervisor can view the specific details of the MAC and assign it to a Service Request Management (SRM) Team. The supervisor also can view the status of any MAC previously assigned by clicking the appropriate hyperlink on the summary page. MACs are sorted by MAC number and then the date the MAC was submitted. The totals for the pending Seat and Account MACs are dynamically updated as the teams change the status in the MAC details page.
Security Group	Supervisor
Data	All fields are derived from TblMAC.
Actions	Supervisor can sort by column heading and choose a MAC to assign to a team.

4.1.3.2 Supervisor MAC Details Review and Assign

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Description	This page allows the Supervisor to view the details of a MAC selected from the Supervisor Home Page. The Supervisor can assign a MAC request to specific teams by selecting the team number from a list and selecting the update status option. This page will display different fields based on whether the MAC is an Account or a Seat MAC. Comments can also be added in the text-entry box.
Security Group	Supervisor
Data	All fields are derived fromTblMAC and the key is obtained through a session variable from the assignment page.
Actions	Supervisor can modify the status, assign a team and provide comments. This page would interface with Remedy Help-Desk to generate trouble-tickets.

4.1.3.3 Supervisor MAC Status Review

Supervisor eReview

Logout

The following MACs have been assigned to Teams
6 Seat MACs
7 Account MACs

Back to Supervisor Page

Team Number	MAC Number	MAC Type	Classification	CLIN	MAC Submit Date	MAC Status Date	MAC Status	Base	Team Comments
1	7	New Order	unclassified	0001AA	5/20/2005	6/8/2005	Working	NAS Pearl Harbor	Comment2
1	5	New Order	unclassified	0001AA	5/20/2005	6/5/2005	Working	NRC Honolulu	
1	2	New Order	unclassified	0001AA	5/20/2005	6/5/2005	Working	Base	I'm working on it!
1	16	New User	unclassified	0026AF	5/27/2005	6/5/2005	Working	NAVFAC	
1	17	New User	unclassified	0026AF	5/28/2005	6/5/2005	Assigned	NAVFAC	
1	21	New User	unclassified	0026AF	6/1/2005	6/8/2005	Assigned	NAVFAC	8 June leave me alone already!
1	27	New User	unclassified	0026AF	6/7/2005	6/7/2005	Working	NAVFAC	Test of working account MAC
1	28	New User	unclassified	0026AF	6/8/2005	6/5/2005	Working	NAVFAC	
1	29	New User	unclassified	0026AF	6/9/2005	6/4/2005	Assigned	NAVFAC	
1	41	New User	unclassified	0026AF	6/21/2005	6/6/2005	Assigned	NAVFAC	
2	6	New Order	unclassified	0001AD	5/20/2005	5/25/2005	Assigned	NRC Honolulu	
3	8	New Order	unclassified	0002AA	5/20/2005	6/2/2005	Assigned	NAS Pearl Harbor	

Description	Provides the Supervisor with a summary view of all MACs that were previously assigned to a SRM team. The totals for the pending Seat and Account MACs are dynamically updated as the teams change the status in the MAC details page.
Security Group	Supervisor
Data	All fields are derived from TblMAC.
Actions	Supervisor can return to the previous page and sort by column headers.

4.1.3.4 Contractor Team Home

Team eReview

Logout

Welcome Ian, You have 10 MACs open.
3 Seat MACs
7 Account MACs

Review MACs Assigned to Team 1

MAC Number	MAC Type	CLIN	MAC Submit Date	Status	Base/Command	Supervisor Direction	View Details
7	New Order	0001AA	5/20/2005	Working	NAS Pearl Harbor		Details
5	New Order	0001AA	5/20/2005	Working	NRC Honolulu		Details
2	New Order	0001AA	5/20/2005	Working	Base		Details
16	New User	0026AF	5/27/2005	Working	NAVFAC		Details
17	New User	0026AF	5/28/2005	Assigned	NAVFAC		Details
21	New User	0026AF	6/1/2005	Assigned	NAVFAC		Details
27	New User	0026AF	6/7/2005	Working	NAVFAC		Details
28	New User	0026AF	6/8/2005	Working	NAVFAC		Details
29	New User	0026AF	6/9/2005	Assigned	NAVFAC		Details
41	New User	0026AF	6/21/2005	Assigned	NAVFAC		Details

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Description	Provides the team with a view of all MACs assigned to them by the Supervisor. By selecting the View Details hyperlink for a specific MAC, the team can view the specific details of the MAC, update the MAC status and input comments. Any MAC status updates submitted by the team will automatically update the status in the Supervisor's MAC Status Review page. The totals for the pending Seat and Account MACs are dynamically updated as the team changes the status in the MAC details page.
Security Group	Team
Data	All fields are from TblMAC. Team number is derived from the logon cookie and filters the results to show only team 1 pages.
Actions	Team members can select a particular MAC to link to details page. Selected MAC number is posted to the details page with

4.1.3.5 Contractor Team MAC Details Review and Assign

Team eStatus

MAC Status Review

Back to Team Page

Account: **MAC #21**   User Location: Comments:

Seat CLIN
Billing TEC
Task Order Mod #

Command POC:

Command
Phone
Email Address

Description	This page allows the Team to view the details of a MAC selected from the Team Home Page. The Team can update the MAC status from assigned to working and complete. Comments can also be added in the text-entry box. Any MAC status updates submitted by the team will automatically update the status in the Supervisor's MAC Status Review page.
Security Group	Team
Data	Describe each field on the screen and how it is derived
Actions	Describe each action that can be performed from this screen. This usually involves command buttons, menu items, etc.

4.1.4.1 Shuffle Function

This page shows only "Processing Request. Linking accounts to seats..."

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<u>**Detailed Design**</u>

Description	Thi acti
Security Group	AC
Data	Sec
Actions	Thi Sea ead sea ead the unt

4.1.4.1 Shuffle Function

This page shows only "Pr

Description	Thi acti
Security Group	AC
Data	Sec
Actions	Thi Sea ead sea ead the until either all free seats are exhausted or UserNums are exhausted.

4.1.5.1 HELP Active Directory

| Description	This page show how an ACTR can map a drive and see their active directory accounts.
Security Group	ACTR, DCTR
Data	Static page
Actions	None. Information only.

4.1.5.2 Help Asset ID
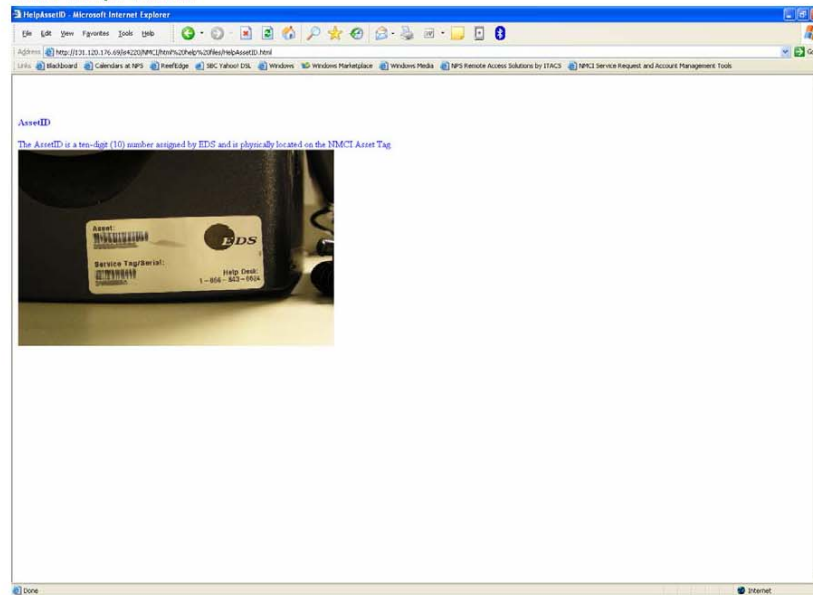
| Description	View a picture of where to find asset ID and Service Tag number.
Security Group	ACTR, DCTR
Data	None.
Actions	None.

4.1.5.3 Help Computer Name
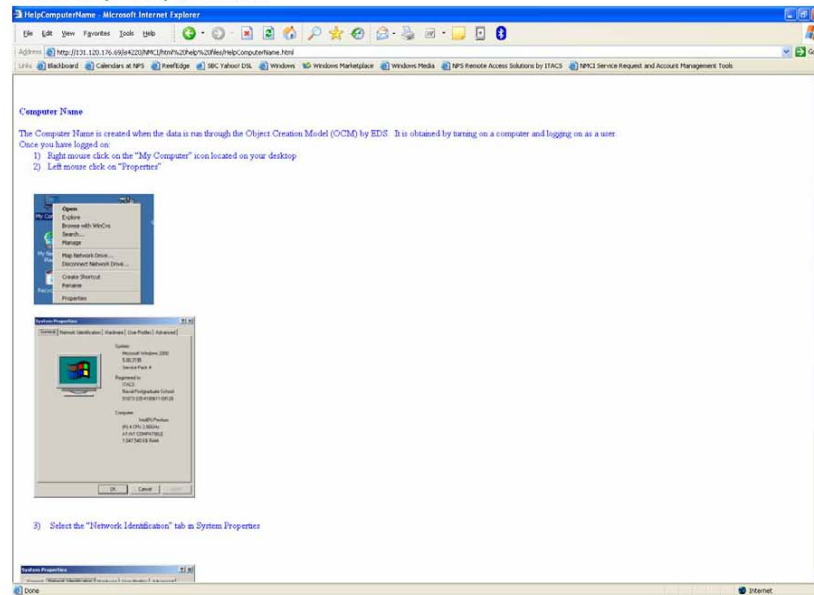
Description	View a picture of where to find the Computer Name.
Security Group	ACTR, DCTR
Data	None.
Actions	None.

4.1.5.4 Help Seat ID
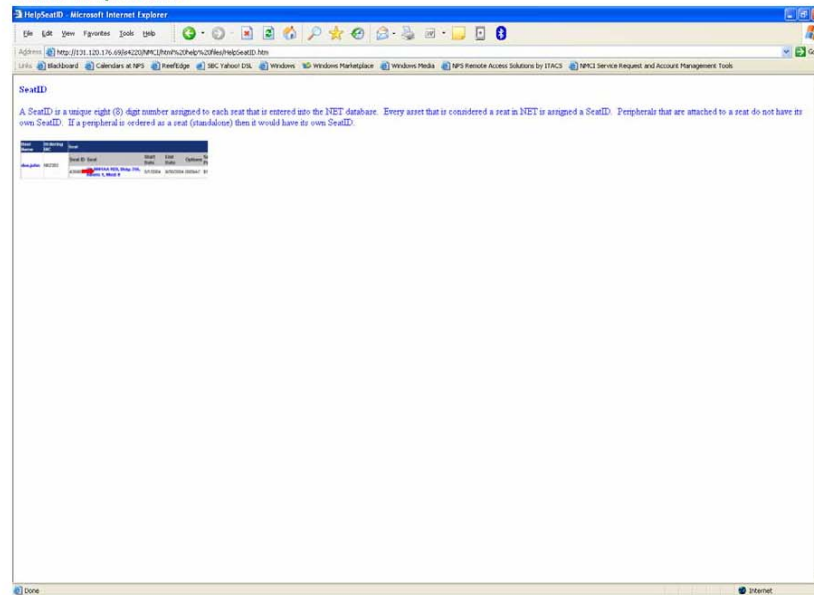
Description	View a picture of where to find NMCI Seat ID.
Security Group	ACTR, DCTR
Data	None.
Actions	None.

4.2 Reports

4.2.1 Report RESFOR Statistics.

Description	The report provides the RESFOR CTR with statistical Account and Seat statistical information. The information is automatically updated on a scheduled basis by use of the shuffle application. The user may manually execute the shuffle application to view current data.
Security Group	RESFOR
Data	Non-billable accounts are those in Disabled or Pending status in the UserProfile table. Total Billable accounts are not in disabled or pending. Total Free Accounts derived from seats is the row count of TblAccounts Free Accounts unoccupied is the count of rows in TblAccounts where UserNum is Null. CLIN'24s will either be zero if Free Accounts Unoccupied > 0 or this will be Billable accounts – Seats. Installed seats is the number of rows where Status = Installed Installed seats is the number where Status does not = Returned, Rejected or Installed.
Groupings	This is a numerical report.
Totals	See Data description
Filters	None.
Export Formats	Printer through IE or data may be captured and stored in a historical table not present in this prototype.
Frequency	Shuffle function should be executed after COB for last time zones daily.

	Historical information can be written to a row nightly. Report can be viewed on demand and updated on demand.

5. Business Layer

Define all of the objects necessary to support the presentation layer. First show the object hierarchy then include the Microsoft Visual Modeler file that shows the details as Appendix A.

6. Database Layer

Appendix B contains a detailed description of the attributes associated with each field, table and view used to support this application.
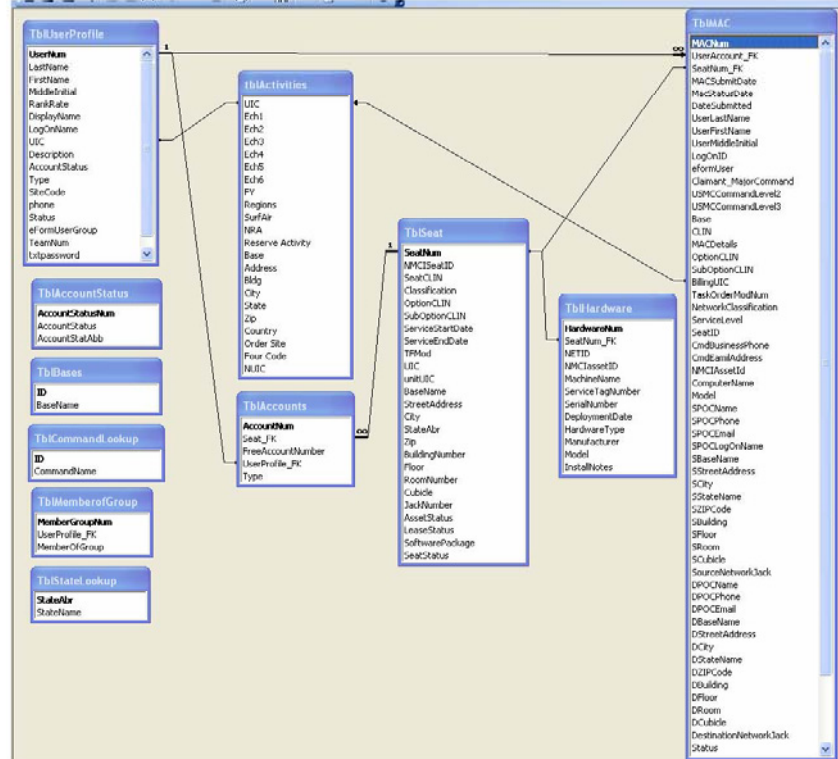
7. Other Design Considerations

7.1 Conversion Modules

Server 2003 Active Directory can export to a Microsoft Database format and vice-versa.

_____

Developed by NPS, NMCI Management Prototype Team

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7.2 Archive and Purge

Current model keeps all M
a certain frequency that c
for every account. Likewis
Deleted user profiles shou

7.3 Backup and Recov

Backup should be accomp
offline network storage. A
hosted on mirrored-array

7.4 Security Architect

The DMBS controls datab
rights. Users should not b
default internet guest use
permission.

The Host site security is
need to have modify perm

eForm Usergroups are as
User: No access to the si
ACTR: View of data only
ACTR can submit request
DCTR: View and change
commands. They can dri
RESFOR: Allowed to view

7.5 System Interfaces

System should interface w

7.6 Batch Jobs

Shuffle Profiles and accou

7.7 Performance and

Explain how we will desig
Procedures, de-normalize
programming techniques,
Server's Show Plan.

7.8 Platform Depender

Explain the installation (o
running along with our pla
(Windows 95, 98, NT 4, 5

7.9 Localization Consi

Explain our design for har
format, etc.), if any.

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7.10 Other Modules

Describe any other miscel

8. Detailed Design

To ensure all functional re
each functional requireme

Functional Requirement
3.1.2 Embedded Training
3.1.2.a
3.1.2.b
3.1.3 ACTR Tool
3.1.3.a
3.1.3.b
3.1.3.c
3.1.3.d
3.1.3.1 In-process Users
3.1.3.1.a
3.1.3.1.b
3.1.3.1.c

3.1.3.2 Request Password	4.1.1.7 Accounts within a specific ACTR's UIC
	4.1.1.8 Account Details
3.1.3.3 Search MAC Account History	4.1.2.3 ACTR Home
	4.1.1.1 In-Process new users- Search Accounts for Profile
	4.1.1.2 In-Process new users "Search Results"
	4.1.1.4 User MAC History
3.1.3.4 Order a new seat	4.1.2.4 Order a hardware seat
3.1.3.4.a	4.1.2.5 Order Review
3.1.3.4.b	4.1.2.7 Seat_Review
3.1.3.4.c	4.1.2.12 Seat Details for pending seat
3.1.3.5 Request an Upgrade to an existing seat	4.1.2.8 Seat Selection
3.1.3.5.a	4.1.2.9 Seat Upgrade
3.1.3.5.b	
3.1.3.6 Request a Physical Seat Move	4.1.2.8 Seat Selection
3.1.3.6.a	4.1.2.10 Request Seat Move
3.1.3.7 Turn in any excess seats	4.1.2.8 Seat Selection
3.1.3.7.a	4.1.2.11 Seat Turn-in
3.1.3.8 View/Edit Seat Data	4.1.2.7 Seat_Review
3.1.3.8.a	4.1.2.13 Seat Edit Details
	4.1.2.14 Administrative Seat Edit
	4.1.2.16 Edit Computer
	4.1.2.15 Edit Seat Location
3.1.3.9 View/Edit Hardware and peripherals	4.1.2.7 Seat_Review
3.1.3.9.a	4.1.2.13 Seat Edit Details

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3.1.3.10 Validate eMarketplace Invoice 3.1.3.11 Administratively Add Seats 3.1.3.11.a 3.1.3.11.b 3.1.3.11.c 3.1.3.11.d 3.1.3.11.e 3.1.3.11.f	4.1.2.14 Administrative Seat Edit 4.1.2.16 Edit Computer 4.1.2.15 Edit Seat Location 4.1.2.7 Seat_Review 4.1.2.20 Administratively Add Seat 4.1.2.21 Administratively Add Seat Location 4.1.2.22 Administratively add seat computer 4.1.2.17 Add Peripheral 4.1.2.13 Seat Edit Details 4.1.2.7 Seat_Review
3.1.4 DCTR 3.1.4.a 3.1.4.b 3.1.4.c	4.1.2.3 ACTR Home 4.1.1.9 DCTR Home 4.1.1.10 DCTR MAC Seat Order Review 4.1.1.11 DCTR MAC Account Order Review 4.1.1.12
3.1.5 Contractor Management 3.1.5.a	4.1.3.1 Contractor Supervisor Home 4.1.3.4 Contractor Team Home
3.1.5.1 Contractor Supervisor 3.1.5.1.a 3.1.5.1.b 3.1.5.1.c 3.1.5.1.d	4.1.3.1 Contractor Supervisor Home 4.1.3.2 Supervisor MAC Details Review and Assign 4.1.3.3 Supervisor MAC Status Review
3.1.5.2 Contractor SRM Team 3.1.5.2.a 3.1.5.2.b 3.1.5.2.c	4.1.3.4 Contractor Team Home 4.1.3.3 Contractor Team MAC Details Review and Assign
3.1.6 RESFOR Management 3.1.6.a	4.2.1 Report RESFOR Statistics 4.1.4.1 Shuffle Application.

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